MALCOLM PIRNIE

Quality Assurance Project Plan
Operable Unit-2
Soil Remediation Split Sample Program

Cornell-Dubilier Electronics Superfund Site,
South Plainfield, NJ

For: U.S. Army Corps of Engineers

USACE Contract No. W912DQ-08-D-0017
Task Order No. 0009

August 2009

Prepared by:
Malcolm Pirnie, Inc.
104 Corporate Park Drive
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U.S. Army Corps of Engineers
Kansas City District

Quality Assurance Project Plan
Cornell-Dubilier Electronics Superfund Site
Operable Unit-2:
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Prepared by:

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Version: 2009/8/17

Document Control Number: CDOU2SO001

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ATTACHMENTS

ACRONYMS

AES	Atomic Emission Spectroscopy
AL	Action Level
CDE	Cornell-Dubilier Electronics
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHSM	Corporate Health and Safety Manager
CLP	Contract Laboratory Program
COC	Chain of Custody
CRQL	Contract Required Quantitation Limit
CSP	Certified Safety Professional
CVAA	Cold Vapor Atomic Absorption
DESA	Division of Environmental Science and Assessment
DI	Deionized
DOT	Department of Transportation
DPM	Deputy Project Manager
DQA	Data Quality Audit
DQI	Data Quality Indicator
DQO	Data Quality Objective
ECD	Electronic Capture Detector
EDD	Electronic Data Deliverable
FASTAC	Field and Analytical Services Teaming Advisory Committee
FSP	Field Sampling Plan
GC	Gas Chromatography
GC-ECD	Gas Chromatograph-Electron Capture Detector
GC-MS	Gas Chromatograph-Mass Spectrometer
HASL	Health and Safety Laboratory
ICP	Inductively Coupled Plasma
ICP-AES	Inductively Coupled Plasma-Atomic Emission Spectrometry
LCS	Laboratory Control Sample
IGWSCC	Impact to Ground Water Soil Cleanup Criteria
LANL	Los Alamos National Laboratory
LIMS	Laboratory Information Management System
LTTD	Low Temperature Thermal Desorption
MB	Method Blank
MDL	Method Detection Limit
MS	Mass Spectrometer *or* Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable

NELAP	National Environmental Laboratory Accreditation Program
NJDEP	New Jersey Department of Environmental Protection
NS	No standard; designates that no Project Action Limit criterion is available for a particular parameter
OU	Operable Unit
PA	Performance Audit
PCB	Polychlorinated Biphenyl
PCDDs	Polychlorinated Dibenzodioxins
PCDFs	Polychlorinated Dibenzofurans
PT	Performance Testing
PM	Project Manager
PO	Project Officer
PQOs	Project Quality Objectives
PSO	Project Safety Officer
QA	Quality Assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
R	Recovery
RDSCC	Residential Direct Contact Soil Cleanup Criteria
RL	Reporting Limit
ROD	Record of Decision
RPD	Relative Percent Difference
RSCC	Regional Sample Control Center
RSD	Relative Standard Deviation
SA	Spike Added to Spiking Matrix
Sevenson	Sevenson Environmental Services, Inc.
SDG	Sample Delivery Group
SMO	Sample Management Officer
SOP	Standard Operating Procedure
SOW	Statement of Work
SR	Sample Result
SSHP	Site Safety and Health Plan
SSR	Spike Sample Result
SVOC	Semi-Volatile Organic Compounds
TAL	Target Analyte List
TAT	Turnaround Time
TCL	Target Compound List

TEF	Total Equivalency Factor
TEQ	Toxic Equivalent
TSA	Technical Systems Audit
UFP	Uniform Federal Policy
USACE-KCD	United States Army Corps of Engineers-Kansas City District
USACE-NYD	United States Army Corps of Engineers-New York District
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WHO	World Health Organization

INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the analysis of soil split samples to be obtained on behalf of the U.S. Army Corps of Engineers – Kansas City District (USACE-KCD). The split samples are to be representative of the soil remediation samples that will be collected by Sevenson Environmental Services, Inc. (Sevenson) at the Cornell-Dubilier Electronics (CDE) Superfund Site, located in South Plainfield, New Jersey. The soil sample collection effort is described in Sampling and Analysis Plan, CDE Superfund Site Operable Unit (OU) 2 – Soil Remediation, Revision 3, April 2009 prepared by Sevenson. This QAPP details the implementation of the Quality Assurance (QA) and Quality Control (QC) activities developed for the laboratory activities associated with the sample collection oversight and split sample analyses. It includes applicable worksheets from the guidance for the Uniform Federal Policy (UFP) for QAPPs, Final Version March 2005.

BACKGROUND

As part of the soil remediation activities at CDE OU2 expected to commence in 2009, Sevenson is scheduled to collect soil samples at various locations within OU2. Samples will be collected by Sevenson for chemical parameters including selected Target Analyte List (TAL) metals, Target Compound List (TCL) Volatile Organic Compounds (VOCs), TCL Semivolatile Organic Compounds (SVOCs), Organochlorine Pesticides, Polychlorinated Biphenyls (PCBs) as Aroclors, as well as for polychlorinated dibenzo-p-dioxin and polychlorinated dibenzo-p-furan (PCDD/PCDF) isomers at selected locations. In addition, off-site soil to be used as backfill at OU2 will also be tested. The Sevenson results will be compared to the Record of Decision (ROD) Criteria and/or the New Jersey Department of Environmental Protection (NJDEP) Impact to Groundwater Soil Cleanup Criteria (IGWSCC), or other guidance as required by the remedial action contract specifications.

As part of the field oversight program, split samples will be collected from selected Sevenson samples and analyzed independently by the Government to compare against the data generated by Sevenson. Malcolm Pirnie has been contracted by USACE-KCD to obtain, manage and analyze these samples. Each split sample will be analyzed for the same chemical parameters as its corresponding Sevenson sample. This QAPP provides the method reference limits,

measurement performance criteria, and QA requirements for the analytical test groups, and discusses the comparison of the split sample data with the data to be generated by Sevenson. The testing and QA requirements presented in this QAPP including the details of the radiological testing methodology may need to be revised dependent upon the requirements in the final approved Sevenson Sampling and Analysis Plan.

QAPP Worksheet #1
(UFP-QAPP Section 2.1)
Title and Approval Page

Site Name/Project Name: Cornell-Dubilier Electronics Superfund Site Operable Unit 2 Soil Remediation Split Sample Program

Site Location: 333 Hamilton Boulevard, South Plainfield, New Jersey

Document Title: QAPP - Cornell-Dubilier Electronics Superfund Site OU2 Soil Remediation Split Sample Analysis Program

Lead Organization: United States Environmental Protection Agency (USEPA) Region 2

Preparer's Name and Organizational Affiliation: James McCann of Malcolm Pirnie, Inc.

Preparer's Address, Telephone Number, and E-mail Address:
Malcolm Pirnie, Inc., 17-17 Route 208 North, Fair Lawn, NJ 07410
(201) 398-4310
e-mail: jmccann@pirnie.com

Preparation Date (Day/Month/Year): 08/17/2009

Investigative Organization's Project Manager/Date: 9/14/09
Signature
Printed Name/Organization: Edward Dudek, PE, Malcolm Pirnie, Inc.

Investigative Organization's Project QA Officer/Date: 9/11/09
Signature
Printed Name/Organization: James McCann, Malcolm Pirnie, Inc.

Lead Organization's Project Manager/Date: 9/14/09
Signature
Printed Name/Organization: Pietro Mannino, USEPA Region 2 Project Manager

Approval Signatures/Date: 10 Sept 09
Signature
Printed Name/Title: Ken Maas, USACE-KCD Project Manager

Approval Authority: U.S. Army Corps of Engineers, Kansas City (USACE-KCD)

QAPP Worksheet #2
(UFP-QAPP Section 2.2.4)
QAPP Identifying Information

Site Name/Project Name: Cornell Dubilier Superfund Site OU2/ Soil Remediation Split Sample Analysis Program

Title: QAPP- Cornell-Dubilier Electronics Superfund Site OU2 Soil Remediation Split Sample Program

Site Location: 333 Hamilton Boulevard, South Plainfield, New Jersey

Revision Number: 01

Site Number/Code: EPA ID# NJD981557879

Revision Date: March 2009

Operable Unit: OU2

Contractor Name: Malcolm Pirnie, Inc.

Contractor Number: USACE W912-DQ-08-D-0017

Contract Title: Indefinite Delivery/Indefinite Quantity Type Contract for Miscellaneous Military and Civil Hazardous Waste Cleanup Projects and Related Work

Work Assignment Number: Task Order 0009

1. Regulatory Program: Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA)
2. Approval Entity: USEPA Region 2
3. The QAPP is (select one): ☐Generic ☒Project Specific
4. Dates of scoping sessions that were held: February 2009
5. Dates and titles of QAPP documents written for previous Site work, if applicable:

Title	Approval Date
Final Quality Assurance Project Plan for Remedial Investigation/Feasibility Study, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlessex County, New Jersey, Foster Wheeler Environmental Corporation	March 2002
Final Buildings Quality Assurance Project Plan, Cornell-Dubilier Electronics Superfund Site, South Plainfield, NJ prepared by Malcolm Pirnie, Inc.	January 2006
Final Soils Quality Assurance Project Plan, Cornell-Dubilier Electronics Superfund Site, South Plainfield, NJ prepared by Malcolm Pirnie, Inc.	August 2006
Sampling and Analysis Plan, Operable Unit 2 Building Demolition Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, Revision 3 prepared by Sevenson Environmental Services, Inc.	January 2007
Quality Assurance Project Plan, Operable Unit 2 Building Demolition Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, Revision 3 prepared by Sevenson Environmental Services, Inc.	April 2007
Addendum 1, Sampling and Analysis Plan, Operable Unit 2 Building Demolition Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, Revision 3 prepared by Sevenson Environmental Services, Inc.	October 2007
Quality Assurance Project Plan, Cornell-Dubilier Electronics Superfund Site Operable Unit 2: Capacitor Disposal Area Soil Split Sample Analysis Program prepared by Malcolm Pirnie, Inc.	March 2008
Sampling and Analysis Plan (UFP-QAPP and Field Sampling Plan), Operable Unit 2 Soil Remedation Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey, prepared by Sevenson Environmental Services, Inc.	April 2009 (or latest verson)

6. Organizational Partners (stakeholders) and connection with Lead Organization:
   The project organizational partners include representatives from USEPA Region 2, USACE-KCD, USACE New York District (USACE-NYD) and Malcolm Pirnie, Inc. (Malcolm Pirnie). USEPA Region 2 and USACE-KCD will provide project and contract management guidance to Malcolm Pirnie. Malcolm Pirnie will be the primary contractor, will be responsible for developing and implementing the split sample analysis program, and will provide project management for subcontractors. Malcolm Pirnie is expected to coordinate with USACE-NYD on sample collection.

7. Data users: USEPA Region 2, USACE-KCD, USACE-NYD, Malcolm Pirnie, and Sevenson.

8. If any required QAPP elements and required information are not applicable to the project, then circle the omitted QAPP elements and required information on the attached table. Provide an explanation for their exclusion below: Not Applicable

QAPP Worksheet #2
QAPP Identifying Information
(Continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Worksheet # or Related Documents
Project Management and Objectives		
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2.2 Document Format and Table of Contents 2.2.1 Document Control Format 2.2.2 Document Control Numbering System 2.2.3 Table of Contents 2.2.4 QAPP Identifying Information	- Table of Contents - QAPP Identifying Information	2
2.3 Distribution List and Project Personnel Sign-Off Sheet 2.3.1 Distribution List 2.3.2 Project Personnel Sign-Off Sheet	- Distribution List - Project Personnel Sign-Off Sheet	3 4
2.4 Project Organization 2.4.1 Project Organizational Chart 2.4.2 Communication Pathways 2.4.3 Personnel Responsibilities and Qualifications 2.4.4 Special Training Requirements and Certification	- Project Organizational Chart - Communication Pathways - Personnel Responsibilities and Qualifications Table - Special Personnel Training Requirements Table	5 6 7 8
2.5 Project Planning/Problem Definition 2.5.1 Project Planning (Scoping) 2.5.2 Problem Definition, Site History, and Background	- Project Planning Session Documentation (including Data Needs tables) - Project Scoping Session Participants Sheet - Problem Definition, Site History, and Background - Site Maps (historical and present)	9 10 OU2 Soils QAPP, August 2006 and 2009 OU2 Soil Remediation QAPP prepared by Sevenson
2.6 Project Quality Objectives (PQOs) and Measurement Performance Criteria 2.6.1 Development of PQOs Using the Systematic Planning Process 2.6.2 Measurement Performance Criteria	- Site-Specific PQOs - Measurement Performance Criteria Table	11 12

QAPP Worksheet #2
QAPP Identifying Information
(continued)

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3.2 Analytical Tasks 3.2.1 Analytical SOPs 3.2.2 Analytical Instrument Calibration Procedures 3.2.3 Analytical Instrument and Equipment Maintenance, Testing, and Inspection Procedures 3.2.4 Analytical Supply Inspection and Acceptance Procedures	- Analytical SOPs - Analytical SOP Reference Table - Analytical Instrument Calibration Table - Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	23 24 25

QAPP Worksheet #2
QAPP Identifying Information
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Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Worksheet of Related Documents
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QAPP Worksheet #2
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Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Related Documents
Data Review		
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5.2 Data Review Steps 5.2.1 Step I: Verification 5.2.2 Step II: Validation 5.2.2.1 Step IIa Validation Activities 5.2.2.2 Step IIb Validation Activities 5.2.3 Step III: Usability Assessment 5.2.3.1 Data Limitations and Actions from Usability Assessment 5.2.3.2 Activities	- Verification (Step I) Process Table - Validation (Steps IIa and IIb) Process Table - Validation (Steps IIa and IIb) Summary Table - Usability Assessment	34 35 36 37
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QAPP Worksheet #3
(UFP-QAPP Manual Section 2.3.1)

The following persons will receive an electronic copy of the approved QAPP, subsequent QAPP revisions, addenda, and amendments:

Distribution List

QAPP Recipients	Title	Organization	Telephone Number	Fax Number	E-mail Address	Document Control Number
Pietro Mannino	Project Manager	USEPA Region 2	212-637-4395	212-637-4429	Mannino.Pietro@epa.gov	CDOU2SO001
Ken Maas	Project Manager	USACE-KCD	816-389-3709		Kenneth.E.Maas@nwk02.usace.army.mil	CDOU2SO002
Amy Darpinian	USACE Project Chemist	USACE-KCD	816-389-3897		Amy.F.Darpinian@usace.army.mil	CDOU2SO003
Patrick Nejand	USACE Cornell-Dubilier Superfund Site Project Manager	USACE-NYD	908-7691601	908-769-1604	Patrick.C.Nejand@nan02.usace.army.mil	CDOU2SO004
Ed Dudek	Project Manager	Malcolm Pirnie, Inc.	914-641-2686	914-641-2455	edudek@pirnie.com	CDOU2SO005
Ben Girard	Deputy Project Manager	Malcolm Pirnie, Inc	716-667-6645	716-667-0279	bgirard@pirnie.com	CDOU2SO006

Electronic copies of the QAPP will also be available to key personnel named in the organization chart in given in Worksheet 5, Figure 1 and other Malcolm Pirnie personnel who will be assigned to work on the project. Those named above will be responsible for distributing the QAPP and related documents to others in their organization.

QAPP Worksheet #4 (UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: USACE-KCD

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Amy Darpinian	USACE-KCD Project Chemist	816-389-3897	Amy Darpinian	9/1/2009

QAPP Worksheet #4 (UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: Malcolm Pirnie Inc

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Edward Dudek, PE	Project Manager	914-641-2686		8/17/09
James McCann	Project Quality Officer	201-398-4310		8/17/2009

QAPP Worksheet #4 (UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: Malcolm Pirnie Inc

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
To be assigned	Other Field Team Members		Project team members, when assigned, will be required to sign that they have read applicable sections of the QAPP.	The project team members must read applicable sections of the QAPP and SOPs prior to participating in the project.

QAPP Worksheet #5
(UFP-QAPP Manual Section 2.4.1)

Project Organizational Chart

The Organization Chart (provided as Figure 1), the description of the project organization, and the roles of the team members are summarized below:

Project/Task Organization Overview

The project management team will consist of representatives from USEPA Region 2, USACE-KCD, the NJDEP, and Malcolm Pirnie. USEPA Region 2 and USACE-KCD will provide technical oversight to the project and contract management guidance to Malcolm Pirnie. The NJDEP will provide the USEPA with State approval during the soil remediation process. Malcolm Pirnie will be the primary contractor and will be responsible for developing and implementing the split sampling analysis program and providing project management for its subcontractors. Figure 1 presents the project organization.

Cornell-Dubilier Site Team Members

This section contains a description of the project organizational structure. Pietro Mannino is the USEPA Project Manager with responsibility for the CDE Superfund Site. Ken Maas is the USACE-KCD Project Manager. Malcolm Pirnie will be the primary contractor. Additional project team members from other companies may be subcontracted to Malcolm Pirnie.

Project Officer – The Project Officer (PO) is responsible for the commitment of resources required to fulfill Malcolm Pirnie's obligation to the USACE-KCD.

Project Manager – The Project Manager (PM) is accountable to the PO throughout the duration of the project. The PM will be the primary point of contact with the USACE-KCD. The PM may delegate authority to expedite and facilitate the implementation of the project plan. The PM is responsible for:

- Coordination with the USACE-KCD.
- Budget control.
- Subcontractor performance.

- Project coordination.
- Allocation of staffing and resources to implement the QA/QC program and the Site Safety and Health Plan (SSHP).
- Review of engineering and interim reports.

Deputy Project Manager – The Deputy Project Manager (DPM) reports directly to, and works with, the PM. The DPM is responsible for assisting the PM, as needed, with project-related issues.

Project Quality Assurance Consultants – The Project Quality Assurance Consultants are responsible for independent reviews of project quality. The Project Quality Consultants provide an integral contribution to the success of the project by performing technical reviews throughout all project phases and offering technical guidance.

Corporate Health and Safety Manager – The Corporate Health and Safety Manager (CHSM) is responsible for development and administration/implementation of Malcolm Pirnie's Health and Safety program. He/she is responsible for:

- Proper training for Malcolm Pirnie field personnel (including use of personal protective equipment).
- Medical clearance of Malcolm Pirnie field personnel.
- Providing guidance on data interpretation.
- Determining levels of worker protection.

Project Quality Control Officer – The Project Quality Control (QC) Officer is responsible for monitoring of the QA program and reports to the PM. Additional responsibilities include:

- Check that field personnel have adhered to proper sampling procedures, sample identification, and chain-of-custody procedures.
- Review corrective actions to correct deficiencies in the analytical protocol or sampling.

- Preparing QA reports to management.

Sample Management Officer – The Sample Management Officer (SMO) or designee will serve as the on-Site contact person for Malcolm Pirnie for coordination of the logistics of obtaining the split samples and arranging for shipment to the laboratories.

QAPP Worksheet #6
(UFP-QAPP Manual Section 2.4.2)

Communication Pathways

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure (Timing, Pathways, etc.)
Approval of Amendments to the QAPP	Malcolm Pirnie	Project QC Officer (Jim McCann or designee)	201-398-4310	Obtain initial approval from the Investigative Organization PM and submit documented amendments within 10 working days to USACE-KCD/USEPA for approval.
Stop Work and Initiation of Corrective action	Malcolm Pirnie	PM (Ed Dudek or designee)	914-641-2686	The PM communicates within 24 hours of stop work to the project organization by phone, with confirmatory e-mail.
Real time modification, notifications and approval	Malcolm Pirnie	Project QC Officer (Jim McCann or designee) with PM approval.	201-398-4310	Real time modification to the project will require the approval of the Project QC Officer and PM or designees and will be documented using the Field Modifications Form in Attachment 3 within 5 working days.
Reporting of serious issues	Malcolm Pirnie	PM (Ed Dudek or designee)	914-641-2686	Report any serious issues to USEPA and USACE-KCD and other concerned parties by e-mail or memo.
Corrective action	Malcolm Pirnie	Project QC Officer (James McCann or designee)	201-398-4310	Problems are reported to the PM by e-mail within 3 days.

QAPP Worksheet #7
(UFP-QAPP Manual Section 2.4.3)

Personnel Responsibilities and Qualification Table

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications
Kenneth Maas	USACE-KCD PM	USACE-KCD	PM	Professional Engineer
Amy Darpinian	USACE-KCD Project Chemist	USACE-KCD	QA Review and Chemistry	PhD in Chemistry
Patrick Nejand	USACE-NYD Site PM	USACE-NY	Cornell-Dubilier Superfund Site PM	N/A
Edward Dudek, PE	Senior Associate	Malcolm Pirnie, Inc.	Investigative Organization PM	Professional Engineer (NY), ME Civil Engineering, BE Civil Engineering
Ben Girard	Project Engineer	Malcolm Pirnie, Inc.	Investigative Organization DPM	BS in Civil /Environmental Engineering
James McCann	Senior Project Chemist	Malcolm Pirnie, Inc.	Project QC Officer/Chemistry	MA/BS in Chemistry, 40+ years of experience in analytical chemistry, environmental testing, and quality assurance

Note: Resumes of Malcolm Pirnie project team members can be obtained by contacting the Malcolm Pirnie PM or designee.

QAPP Worksheet #8
(UFP-QAPP Manual Section 2.4.4)

Special Personnel Training Requirements Table

Project Function	Specialized Training – Title or Description of Course	Training Provider	Training Date	Personnel/Groups Receiving Training	Personnel Titles/ Organizational Affiliation	Location of Training Records/Certificates
Field Sample and on-Site personnel	Safety and OSHA training as specified in the SSHP	Malcolm Pirnie	Training dates recorded in company/project training records	All field team members working at CDE Site.	All Malcolm Pirnie and subcontractor personnel working at CDE Site	Malcolm Pirnie Project Files
Sample Management and Creation of sample COC records	Forms II Lite Software Training	USEPA on-line training	Training dates recorded in company/project training records	SMO or designee assigned to log samples into Forms II Lite	Malcolm Pirnie preparing COC forms.	Malcolm Pirnie Project Files

Note: Training records will be kept in the Malcolm Pirnie project files.

QAPP Worksheet #9-1
(UFP-QAPP Manual Section 2.5.1)

Project Team Participants:
Project Scoping Session Participants Sheet

Project Name: Cornell-Dubilier Electronics Superfund Site OU2 Soil Remediation Split Sample Program **Projected Date(s) of Sampling:** During 2009/2010 **Project Manager:** Edward Dudek, PE	**Site Name:** Cornell-Dubilier Electronics Superfund Site Operable Unit 2 Soils **Site Location:** 333 Hamilton Boulevard, South Plainfield, New Jersey

Date of Session: December 2008-February 2009
Scoping Session Purpose: Discussed proposed split sample program.

Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Pietro Mannino	USEPA PM	USEPA Region 2	212-637-4395	Mannino.Pietro@epa.gov	USEPA PM
Kenneth Maas	USACE-KCD PM	USACE-KCD	816-389-3709	Kenneth.E.Maas@usace.army.mil	USACE-KCD PM
Amy Darpinian,	USACE-KCD Project Chemist	USACE-KCD	816-389-3897	Amy.F.Darpinian@usace.army.mil	USACE-KCD Chemist
Patrick Nejand	USACE-NYD CDE Site PM	USACE-NYD	908-769-1601	Patrick.C.Nejand@nan02.usace.army.mil	USACE-NYD– CDE Site PM
Edward Dudek, PE	Senior Associate	Malcolm Pirnie Inc	914-641-2686	Edudek@pirnie.com	PM

Other team members participated as necessary in the weekly project planning/status calls.

Comments/Decisions: The needs for a split sample program for the samples to be collected by Sevenson at OU2 during the soils remediation program were discussed.

Action Items: Jim McCann was assigned to prepare a QAPP covering the collection and analysis of split samples.

Consensus Decisions: USEPA Contract Laboratory Program (CLP) laboratories or possibly the Division of Environmental Science and Assessment (DESA) laboratory will analyze the split samples, with the exception of the radiological analysis on the backfill soil and the soil

dioxin/furan analyses, which will be performed by a subcontract laboratory. Split samples will not be collected from samples submitted by Sevenson to CLP or DESA.

QAPP Worksheet #9-2
(UFP-QAPP Manual Section 2.5.1)

Project Team Participants:
Project Scoping Session Participants Sheet

Project Name: Cornell-Dubilier Electronics Superfund Site OU2 Soil Remediation Split Sample Program **Projected Date(s) of Sampling:** During 2009 **Project Manager:** Edward Dudek, PE	**Site Name:** Cornell-Dubilier Electronics Superfund Site Operable Unit 2 Soils **Site Location:** 333 Hamilton Boulevard, South Plainfield, New Jersey

Date of Sessions: February 2009.
Scoping Session Purpose: Plan the project.

Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Edward Dudek, PE	Senior Assoicate	Malcolm Pirnie, Inc.	914-641-2686	Edudek@pirnie.com	PM
Ben Girard	Project Engineer	Malcolm Pirnie, Inc.	716-667-6645	Bgirard@pirnie.com	DPM
James McCann	Senior Project Chemist	Malcolm Pirnie, Inc.	201-398-4310	Jmccann@pirnie.com	Project QC Officer/Chemist

Other team members from the Malcolm Pirnie investigative team participated as necessary in the weekly project planning/status calls.

Comments/Decisions: Discussed communications received from Amy Darpinian and Ken Maas of the USACE-KCD outlining the need for a split sampling program for the CDE OU2. Oversight by Malcolm Pirnie of the sample collection will be optional, since Sevenson may collect and supply the split samples at the direction of the on-site USACE-NYD PM or designee.

Action Items: Jim McCann was assigned to obtain a subcontract lab to perform the analyses and to prepare a QAPP covering the planned split sample management and analyses.

Consensus Decisions: Per the client's direction DESA/CLP labs will be employed for the majority of split sample analyses (with the exception of dioxin/furan and radiochemistry analyses) for samples submitted by Sevenson to non-CLP subcontract laboratories, for the same analytical groups tested by Sevenson. The labs will be requested to provide a rapid sample turn-around time (TAT).

QAPP Worksheet #10
(UFP-QAPP Manual Section 2.5.2)

Problem Definition

Commencing in 2009, as part of the soil remediation activities at CDE OU2, Sevenson is scheduled to collect soil samples at various locations at CDE OU2, as described in the Quality Assurance Project Plan – Cornell-Dubilier Electronics Superfund Site Operable Unit 2 – Soil Remediation, South Plainfield, New Jersey (Sevenson, 2009). Samples will be collected by Sevenson for chemical parameters including selected TAL metals, TCL VOCs, TCL SVOCs, Organochlorine Pesticides, and PCBs as Aroclors. At selected locations soil samples will also be collected for analysis for PCDD/PCDF isomers. In addition, off-site soil used as backfill at OU2 will also be tested for the full suite of parameters listed above plus radiological analytes.

As described in the Sevenson QAPP, the analytical results will be compared to the ROD Criteria and/or the NJDEP IGWSCC or other guidance as required by the remedial action contract specifications. As part of sampling the field oversight program, split samples will be obtained from selected Sevenson samples and analyzed independently by the Government to compare the results to the data generated by Sevenson. Malcolm Pirnie has been contracted by USACE-KCD to collect and analyze the split samples and to evaluate the split sample data. The split sample data will be compared to the results obtained by Sevenson to assess accuracy and any potential bias of the Sevenson dataset.

The split samples will be collected by Sevenson and provided to a Government or Malcolm Pirnie, Inc. representative for shipping to the approved laboratory.

QAPP Worksheet #11
(UFP-QAPP Manual Section 2.6.1)

Project Quality Objectives /Systematic Planning Process Statements

Who will use the data? USEPA Region 2, USACE-KCD, Malcolm Pirnie, and Sevenson.
What will the data be used for? The data collected from the soil split samples will be used to assess the precision and comparability of chemical data obtained from samples collected by Sevenson at OU2.
What types of data are needed? Analytical data needs are associated with analysis of split samples representative of soil samples collected by Sevenson for PCB Aroclors, Pesticides, TCL VOCs, TCL SVOCs, TAL Metals and PCDDs/PCDFs. A split sample of the backfill soil will be tested for radiological parameters in addition to the above listed parameters.
How "good" do the data need to be in order to support the environmental decision? The data must be technically defensible and of sufficient quality to support the project Data Quality Objectives (DQOs). The laboratory employed for the split sample analyses should have quantitation limits (QLs) low enough so the data can be compared to the data being obtained by Sevenson's laboratory.
How much data are needed? It is anticipated that split samples will be collected and analyzed for the test parameters listed above on approximately 5 to 10% of the 500 soil samples to be collected and analyzed by Sevenson.
Where, when, and how should the data be collected/generated? Soil split samples will be collected starting in the fall of 2009, dependent on Sevenson's final schedule for collection of final soil excavation samples. We anticipate that the majority split samples collected except for dioxin/furan and radiochemistry analyses will be submitted to USEPA CLP Laboratories for analyses. The split samples will be collected by Sevenson personnel at the direction of a government representative or Malcolm Pirnie Inc. field team members, with custody subsequently transferred to the Malcolm Pirnie field team for analysis.

Who will collect and generate the data?
Sevenson field personnel will collect the soil verification samples and provide a homogenized split sample from approximately 5% to 10% of the samples to Malcolm Pirnie for analysis. Split samples for VOCs will be collected as grab samples. Split samples will not be collected for samples being submitted by Sevenson to the USEPA DESA or an assigned USEPA CLP laboratory. The split samples will be randomly selected with input from Malcolm Pirnie and or the USACE representative present at the site. The samples will be transferred to Malcolm Pirnie and shipped to the assigned laboratory for analysis.

How will the data be reported?
The data will be reported by the assigned laboratory to Malcolm Pirnie according to the requirements in Worksheet 29. An electronic data deliverable (EDD) will be provided by the laboratory as an Excel file, as well as a hard copy full data package including the raw data. A preliminary report will be provided by the lab receiving the samples.

How will the data be archived?
Electronic data collected in a USEPA Region 2-compatible format will be archived in the project database to be maintained by Malcolm Pirnie. Hard copies of laboratory reports will also be kept in the Malcolm Pirnie project files. Data will be transferred to USACE-KCD upon completion of the project. At USEPA's request, an EDD in the Region 2-compatible format will be transferred to their data repository.

QAPP Worksheet #12-1

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	Dioxins/Furans
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP**[1]	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria** [1]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
Split Sample	SW846-8290 (Test America SOP WS-ID-0005) or USEPA-CLP SOW DLM02.0	Precision	Relative Percent Difference (RPD) < 35% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates of split samples analyzed by the same lab	S & A
		Accuracy/Bias	GC resolution and mass resolution checks per SW846-8290	Performance checks	A
		Accuracy/Bias	Per SW846-8290 continuing calibration check no more than 25 % RPD for 17 unlabeled compounds and 35% RPD for 9 labeled reference compounds	Calibration Verification	A
		Accuracy/Bias	Recoveries 70-130% or per laboratory control limits	Laboratory Control Sample (LCS)	A
		Accuracy/Bias	Recovery should be between 40 and 135 percent for all nine internal standards	Internal Standards	A
		Accuracy/ Sensitivity	Less than the QLs	Method Blanks	A
		Sensitivity	Must be low enough to support the QLs	Method Detection Limits (MDLs)	A
		Completeness	>90% collection, >90% laboratory analysis	Data Completeness Check	S & A

1 The assigned laboratory must perform and meet all the measurement performance criteria which assess the analytical Data Quality Indicators (DQIs) specified in SW846-8290 or optionally per the USEPA CLP Statement of Work (SOW) DLM02.0, such as initial and ongoing studies to demonstrate precision and accuracy; calibration verification, internal standards and LCS for accuracy; and blanks and MDLs for sensitivity.

QAPP Worksheet #12-2

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	TCL Volatiles
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP**[1]	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria** [1]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
Split Sample	USEPA-CLP SOW SOM01.2 or DESA method	Precision	RDP<35%% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates of split samples analyzed by the same lab	S & A
		Accuracy/Bias	Per SOM01.2, less than 20% difference	Continuing calibration verification	A
		Accuracy/Bias	Deuterated Monitoring Compound recoveries per requirements in SOM01.2 Exhibit D, Table 5 for Criteria	Deuterated Monitoring Compounds	A
		Accuracy/Bias	Per SOM01.2- Area change -50% to +100%; Retention times within +30 seconds of calibration	Internal Standard	A
		Sensitivity	Per requirements in SOM01.2 , low enough to support QLs	MDLs	A
		Accuracy/ Sensitivity	Less than CRQLs, Reference USEPA Region 2 SOP No. 34/Trace VOA - Blank Type Criteria Table	Method Blanks	A
		Completeness	>90% sample collection, >90% laboratory analysis	Data Completeness Check	S & A

1 The assigned laboratory must perform and meet all the measurement performance criteria which assess the analytical DQIs specified in USEPA CLP SOW SOM01.2, such as laboratory duplicates for precision, Deuterated Monitoring Compounds for accuracy, and blanks and MDLs for sensitivity. If DESA performs the analysis they will meet the measurement performance and QC criteria in their SOP.

QAPP Worksheet #12-3

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	TCL SVOC
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP**[1]	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria** [1]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
Split Sample	USEPA-CLP SOW SOM01.2,or DESA method	Precision	RPD< 35% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates of split samples analyzed by the same lab	S & A
		Accuracy/Bias	Per SOM01.2 Exhibit D, Table 4	Continuing calibration verification	A
		Accuracy/Bias	Deuterated Monitoring Compound recoveries per requirements in SOM01.2 Exhibit D, Table 6 for Criteria	Deuterated Monitoring Compounds	A
		Accuracy/Bias	Per the requirements in SOM01.2, Exhibit D	Internal Standard	A
		Sensitivity	Per requirements in SOM01.2, low enough to support QLs	MDLs	A
		Accuracy/ Sensitivity	Less than CRQLs or per SOM01.2	MB	A
		Completeness	>90% soil collection, >90% laboratory analysis	Data Completeness Check	S & A

1. The assigned laboratory must perform and meet all the measurement performance criteria which assess the analytical DQIs specified in USEPA CLP SOW SOM01.2, such as laboratory duplicates for precision, Deuterated Monitoring Compounds for accuracy, and blanks and MDLs for sensitivity. If DESA performs the analysis they will meet the measurement performance and QC criteria in their SOP.

QAPP Worksheet #12-4

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	Pesticides
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP[1]**	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria [1]**	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
Split Sample	USEPA-CLP SOW SOM01.2 or DESA method	Precision	RPD< 35% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates of split samples analyzed by the same lab	S & A
		Accuracy/Bias /Precision	Per recovery and RPD% requirements in SOM01.2, Exhibit D, Table 3 for Criteria	MS/MSD	A
		Accuracy/Bias	Per recovery requirements in SOM0.1.2 Exhibit D, Table 2 for Criteria	Laboratory Control Sample (LCS)	A
		Accuracy/Bias	Recoveries per SOM01.2, Exhibit D	Surrogates Standards	A
		Sensitivity	Per requirements in SOM01.2, low enough to support QLs	MDLs	A
		Accuracy/ Sensitivity	No analyte > CRQLs	Method Blanks	A
		Completeness	>90% collection, >90% laboratory analysis	Data Completeness Check	S & A

1. The assigned laboratory must perform and meet all the measurement performance criteria which assess the analytical DQIs specified in USEPA CLP SOW SOM01.2, such as laboratory duplicates and MSDs for precision, MS, LCS for accuracy, and blanks and MDLs for sensitivity. If DESA performs the analysis they will meet the measurement performance and QC criteria in their SOP.

QAPP Worksheet #12-5

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	PCB Aroclors
Concentration Level	Low

Sampling Procedure	Analytical Method/SOP[1]	Data Quality Indicators (DQIs)	Measurement Performance Criteria [1]	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)
Split Sample	USEPA-CLP SOW SOM01.2 or DESA method	Precision	RPD< 35% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates of split samples analyzed by the same lab	S & A
		Accuracy/Bias	Aroclors 1060/1260 standard within less than +/- 15% drift. Retention times within windows	Continuing calibration verification	A
		Accuracy/Bias/ Precision	Per recoveries and RPD% requirements in SOM01.2, Exhibit D, Table 1 for Criteria	MS/MSD	A
		Accuracy/Bias	Per recovery requirements in SOM0.1.2 Exhibit D, Table 2 for Criteria	LCS	A
		Accuracy/Bias	Recoveries per SOM01.2, Exhibit D	Surrogates Standards	A
		Sensitivity	Per requirements in SOM01.2, low enough to support QLs	MDLs	A
		Accuracy/ Sensitivity	No analyte > CRQLs, Reference USEPA Region 2 SOP No. 37/Low/Medium Aroclor - Blank Type Criteria Table	MBs	A
		Completeness	>90% collection, >90% laboratory analysis	Data Completeness Check	S & A

1. The assigned laboratory must perform and meet all measurement performance criteria which assess the analytical DQIs specified in USEPA CLP SOW SOM01.2, such as laboratory duplicates and MSDs for precision, MS, LCS for accuracy, and blanks and MDLs for sensitivity. If DESA performs the analysis they will meet the measurement performance and QC criteria in their SOP.

QAPP Worksheet #12-6

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	Inorganics TAL (Target Analyte List) Metals and Cyanide
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP**[1]	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria** [1]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
Split Sample	USEPA CLP Statement of Work (SOW) ILM05.4 or DESA methods[1]	Precision	RPD< 35% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates of split samples analyzed by the same lab	S & A
		Accuracy/Bias	Recovery 90-110% or Per requirements in ILM05.4	Continuing calibration verification	A
		Precision	RPD<20% for duplicate values greater than or equal to 5 times the QLs	Lab Duplicate	A
		Accuracy/Bias	Recovery 75-125% or per ILM05.4	MS	A
		Accuracy/Bias	Recovery 75-125% or per ILM05.4	LCS	A
		Accuracy/ Sensitivity	Less than CRQLs	MBs	A
		Sensitivity	Determination per ILM05.4 and low enough to support the QLs.	MDLs	A
		Completeness	>90% collection, >90% laboratory analysis	Data Completeness Check	S & A

1 The assigned laboratory must perform and meet all measurement performance criteria which assess the analytical DQIs specified in the applicable USEPA CLP Statement of Work (SOW) ILM05.4. If DESA performs the analysis they will meet the measurement performance and QC criteria in their SOP.

QAPP Worksheet #12-7

Measurement Performance Criteria Table

Matrix	Soil
Analytical Group	Radiological
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP**	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria** [1, 3]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
Split Sample	HASL[2]-300 or equivalent[2]	Precision	RPD≤ 35% for duplicate values or with a difference ≤ 2 X detection limit	Laboratory Duplicates	S & A
		Accuracy	Gamma Spectroscopy: Detector Resolution – within ±0.4 Full Width at half maximum Energy – within ± 1 keV of the known energies Efficiency- 90-110% of the efficiency determined during initial calibration	Calibration Verification	A
		Accuracy	Gamma Spectroscopy: ±3 standard deviations of the long-term average	Detector Background	A
		Completeness	>90% soil collection, >90% lab analysis	Data Completeness Check	S & A

1. The subcontract laboratory will be required to meet the above criteria.
2. HASL = Health and Safety Laboratory; LANL = Los Alamos National Laboratory.
3. These criteria may be modified, dependent upon the techniques employed by the assigned subcontracted Radiochemistry laboratory.

Precision, Accuracy, Completeness, and Comparability

Precision

Precision measures the reproducibility of data or measurements under specific conditions. Precision is a quantitative measure of the variability of a group of data compared to their average value. Duplicate precision is stated in terms of relative percent difference (RPD) or absolute difference between two measurements. Measurement of precision is dependent upon sampling technique and analytical method. Field duplicate and laboratory duplicate samples will be used to measure precision for project samples. Both sampling and analysis will be as consistent as possible. For a pair of measurements, RPD (or absolute difference) will be calculated as presented below:

$$RPD(\%) = \frac{|D_1 - D_2|}{\left[\frac{(D_1 + D_2)}{2}\right]} \times 100$$

where: D_1 and D_2 = the two replicate values.

RPD will be compared to the QA requirements listed in the applicable laboratory standard operating procedures.

Accuracy

Accuracy measures the bias in a measurement system. Sources of error include the sampling process, field contamination, preservation, handling, shipping, sample matrix, sample preparation, and analysis technique. Analytical accuracy will be assessed through surrogate spike, MS; LCS and/or quality check samples, where applicable. In general, accuracy is measured in terms of percent recovery (%R):

$$\%R = \frac{(SSR - SR)}{SA} \times 100$$

where: SSR = spike sample result
SR = sample result
SA = spike added to spiking matrix

Completeness

Completeness is a measure of the amount of usable data obtained from a measurement system compared to the amount of data that was expected to be obtained under normal conditions. It is expected that the laboratories used for this project will provide data that meet the QC acceptance criteria for 90 percent, or more, of all samples analyzed. Following the completion of the analytical testing, the percent completeness will be calculated by the following equation:

$$\text{COMPLETENESS } (\%) = \frac{\text{number of usable data}}{\text{number of samples collected for each parameter analyzed}} \times 100$$

Comparability

Comparability expresses the confidence that one data set can be compared to another data set. A comparison will be made between the split sample data and the Sevenson data to evaluate accuracy and potential bias in the results detected and reported by Sevenson. The RPD between the split sample data and the Sevenson data should be less than 50% for positive detections more than five times the reporting limits.

QAPP Worksheet #13
(UFP-QAPP Manual Section 2.7)

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
The primary analytical data on the split samples which will be collected by Sevenson.	The primary data will be provided by Sevenson.	The types of data are described in the Sevenson QAPP. The primary samples will be collected and the data will be available per the Sevenson project schedule.	The split sample data will be compared against the Sevenson primary data.	None- After the data is validated and the data reports are accepted.

QAPP Worksheet #14
(UFP-QAPP Manual Section 2.8.1)

Summary of Project Tasks

Sampling Tasks: The soil split samples will be obtained from the Sevenson sample collection personnel during a number of sampling tasks. During Post-Excavation Confirmation and Post-Low Temperature Thermal Desorption (LTTD) treatment sampling, approximately 10% of the soil samples collected, as described in the Sevenson Sampling and Analysis Plan, will be analyzed for PCB Aroclors, Organochlorine Pesticides, VOCs, SVOCs, TAL metals and Cyanide. At the discretion of the USACE or USEPA, selected split samples will also be collected during the Post-Excavation Confirmation and Post-LTTD treatment sampling for PCDDs/PCDFs. During Pre-excavation sampling at location SB39 (see the Sevenson QAPP), at least one split sample will also be analyzed for PCDDs/PCDFs. In addition, at least one split sample of an off-site soil sample for backfill to be delivered to OU2 will also be collected for radiochemistry by gamma spectrometry.
Analysis Tasks: The split samples will be analyzed for PCB Aroclors, Organochlorine Pesticides, VOCs, SVOCs, TAL metals and Cyanide. As discussed above, selected samples will be analyzed for PCDDs/PCDFs. It is also anticipated that at least one off-site soil sample for backfill will also be tested for Radionuclides. The testing methodologies are described in Worksheets 19 and 23.
Quality Control Tasks: The analytical and testing laboratories will be required to analyze the QC samples listed in the USEPA SOWs and methods given in Worksheet 28.
Secondary Data: Not applicable.
Data Management Tasks: All analytical information will be placed in an electronic database, which will be maintained in the Malcolm Pirnie, Inc. Corporate Office. All electronic data will be backed up. Hardcopies of data will also be stored in project files. See Worksheet 29 for discussion of data management.
Documentation and Records: All hardcopy data (copies of COC forms, Airbills, etc.) will be taken to the Malcolm Pirnie, Inc. Corporate Office and kept in the project files.
Assessment/Audit Tasks: SOPs will be reviewed prior to the performance of tasks.
Data Review Tasks: The data will be compared to the Sevenson laboratory data. The relative percent differences will be calculated. Differences in the split sample data potentially affecting the decisions based upon the project action limits listed in the Sevenson QAPP will be reported to the USACE and the USEPA.

QAPP Worksheet #15-1
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDLs[3]	Method QL (ug/kg)	MDL [3]	QL (ug/kg) [4]
Dichlorodifluoromethane	75-71-8	NS	-	NA	5.0	NA	5.0
Chloromethane	74-87-3	10,000	1,000	NA	5.0	NA	5.0
Vinyl Chloride	75-01-4	10,000	1,000	NA	5.0	NA	5.0
Bromomethane	74-83-9	1,000	100	NA	5.0	NA	5.0
Chloroethane	75-00-3	NS	-	NA	5.0	NA	5.0
Trichlorofluoromethane	75-69-4	NS	-	NA	5.0	NA	5.0
1,1-Dichloroethene	75-35-4	10,000	1,000	NA	5.0	NA	5.0
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	NS	-	NA	5.0	NA	5.0
Acetone	67-64-1	100,000	10,000	NA	10	NA	10
Carbon Disulfide	75-15-0	NS	-	NA	5.0	NA	5.0
Methyl Acetate	79-20-9	NS	-	NA	5.0	NA	5.0
Methylene Chloride	75-09-2	1,000	100	NA	5.0	NA	5.0
trans-1,2-Dichloroethene	156-60-5	50,000	5,000	NA	5.0	NA	5.0
Methyl tert-Butyl Ether	1634-04-4	NS	-	NA	5.0	NA	5.0
1,1-Dichloroethane	75-34-3	10,000	1,000	NA	5.0	NA	5.0
cis-1,2-Dichloroethene	156-59-2	1,000	100	NA	5.0	NA	5.0
2-Butanone	78-93-3	50,000	5,000	NA	5.0	NA	5.0
Bromochloromethane	74-97-5	NS	-	NA	5.0	NA	5.0
Chloroform	67-66-3	1,000	100	NA	5.0	NA	5.0
1,1,1-Trichloroethane	71-55-6	50,000	5,000	NA	5.0	NA	5.0

QAPP Worksheet #15-1
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDLs[3]	Method QL (ug/kg)	MDL [3]	QL (ug/kg) [4]
Cyclohexane	110-82-7	NS	-	NA	5.0	NA	5.0
Carbon Tetrachloride	56-23-5	1,000	100	NA	5.0	NA	5.0
Benzene	71-43-2	1,000	100	NA	5.0	NA	5.0
1,2-Dichloroethane	107-06-2	1,000	100	NA	5.0	NA	5.0
1,4-Dioxane	123-91-1	NS	-	NA	100	NA	100
Trichloroethene	79-01-6	1,000	100	NA	5.0	NA	5.0
Methylcyclohexane	108-87-2	NS	-	NA	5.0	NA	5.0
1,2-Dichloropropane	78-87-5	NS	-	NA	5.0	NA	5.0
Bromodichloromethane	75-27-4	1,000	100	NA	5.0	NA	5.0
cis-1,3-Dichloropropene	10061-01-5	1,000	100	NA	10	NA	10
4-Methyl-2-Pentanone	108-10-1	50,000	5,000	NA	5.0	NA	5.0
Toluene	108-88-3	500,000	50,000	NA	5.0	NA	5.0
trans-1,3-Dichloropropene	10061-02-6	1,000	100	NA	5.0	NA	5.0
1,1,2-Trichloroethane	79-00-5	1,000	100	NA	5.0	NA	5.0
Tetrachloroethene	127-18-4	1,000	100	NA	5.0	NA	5.0
2-Hexanone	591-78-6	NS	-	NA	5.0	NA	5.0
Dibromochloromethane	124-48-1	1,000	100	NA	5.0	NA	5.0
1,2-Dibromoethane	106-93-4	NS	-	NA	5.0	NA	5.0
Chlorobenzene	108-90-7	1,000	100	NA	5.0	NA	5.0
Ethylbenzene	100-41-4	100,000	10,000	NA	5.0	NA	5.0
Xylenes (total)	1330-20-7	67000	6,700	NA	5.0	NA	5.0

QAPP Worksheet #15-1
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDLs[3]	Method QL (ug/kg)	MDL [3]	QL (ug/kg) [4]
Styrene	100-42-5	100,000	10,000	NA	5.0	NA	5.0
Bromoform	75-25-2	1,000	100	NA	5.0	NA	5.0
Isopropylbenzene	98-82-8	NS	-	NA	5.0	NA	5.0
1,1,2,2-Tetrachloroethane	79-34-5	1,000	100	NA	5.0	NA	5.0
1,3-Dichlorobenzene	541-73-1	100,000	10,000	NA	5.0	NA	5.0
1,4-Dichlorobenzene	106-46-7	100,000	10,000	NA	5.0	NA	5.0
1,2-Dichlorobenzene	95-50-1	50,000	5,000	NA	5.0	NA	5.0
1,2-Dibromo-3-chloropropane	96-12-8	NS	-	NA	5.0	NA	5.0
1,2,4-Trichlorobenzene	120-82-1	100,000	10,000	NA	5.0	NA	5.0
1,2,3-Trichlorobenzene	87-67-6	NS	-	NA	5.0	NA	5.0

1. Project Action Limits listed are those referenced in the Sevenson QAPP, which are based upon the May 1999 NJDEP IGWSCC. "NS" indicates that there is no criterion listed for the analyte.
2. The Project Quantitation Limits listed are based upon those referenced in the Sevenson QAPP and were set at one-tenth of the Project Action Limits.
3. NA indicates that the MDLs are not provided in USEPA CLP SOM01.2, but must be low enough to support the QLs.
4. The achievable laboratory limits listed are based upon the USEPA CLP SOM01.2 CRQLs for low concentration soil.

QAPP Worksheet #15-2
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Semi-volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDL[3]	Method QL (ug/kg)	MDL[3]	QL (ug/kg) [4]
Benzaldehyde	100-52-7	NS	-	NA	170	NA	170
Phenol	108-95-2	50,000	5,000	NA	170	NA	170
bis(2-Chloroethyl) ether	111-44-4	10,000	1,000	NA	170	NA	170
2-Chlorophenol	95-57-8	10,000	1,000	NA	170	NA	170
2-Methylphenol	95-48-7	NS	-	NA	170	NA	170
2,2'-oxybis(1-Chloropropane)	108-60-1	10,000	1,000	NA	170	NA	170
Acetaphenone	98-86-2	NS	-	NA	170	NA	170
4-Methylphenol	106-44-5	NS	-	NA	170	NA	170
N-Nitroso-di-n-propylamine	621-64-7	10,000	1,000	NA	170	NA	170
Hexachloroethane	67-72-1	100,000	10,000	NA	170	NA	170
Nitrobenzene	98-95-3	10,000	1,000	NA	170	NA	170
Isophorone	78-59-1	50,000	5,000	NA	170	NA	170
2-Nitrophenol	88-75-5	NS	-	NA	170	NA	170
2,4-Dimethylphenol	105-67-9	10,000	1,000	NA	170	NA	170
bis(2-Chloroethoxy) methane	111-91-1	NS	-	NA	170	NA	170
2,4-Dichlorophenol	120-83-2	10,000	1,000	NA	170	NA	170
Naphthalene	91-20-3	100,000	10,000	NA	170	NA	170
4-Chloroaniline	106-47-8	NS	-	NA	170	NA	170
Hexachlorobutadiene	87-68-3	100,000	10,000	NA	170	NA	170
Caprolactam	105-60-2	NS	-	NA	170	NA	170
4-Chloro-3-methyphenol	59-50-7	100,000	10,000	NA	170	NA	170

QAPP Worksheet #15-2
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Semi-volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDL [3]	Method QL (ug/kg)	MDL [3]	QL (ug/kg) [4]
2-Methylnaphthalene	91-57-6	NS	-	NA	170	NA	170
Hexachlorocyclopentadiene	77-47-4	100,000	10,000	NA	170	NA	170
2,4,6-Trichlorophenol	88-06-2	10,000	1,000	NA	170	NA	170
2,4,5-Trichlorophenol	95-95-4	50,000	5,000	NA	170	NA	170
1,1'-Biphenyl	92-52-4	NS	-	NA	170	NA	170
2-Chloronapthalene	91-58-7	NS	-	NA	170	NA	170
2-Nitroaniline	88-74-4	NS	-	NA	170	NA	170
Dimethylphthalate	131-11-3	50,000	5,000	NA	170	NA	170
2,6-Dinitrotoluene	606-20-2	10,000	1,000	NA	170	NA	170
Acenaphthylene	208-96-8	NS	-	NA	170	NA	170
3-Nitroaniline	99-09-2	NS	-	NA	170	NA	170
Acenaphthene	83-32-9	100,000	10,000	NA	170	NA	170
2,4-Dinitrophenol	51-28-5	10,000	1,000	NA	170	NA	170
4-Nitrophenol	100-02-7	NS	-	NA	170	NA	170
Dibenzofuran	132-64-9	NS	-	NA	170	NA	170
2,4-Dinitrotoluene	121-14-2	NS	-	NA	170	NA	170
Diethylphthalate	84-66-2	50,000	5,000	NA	170	NA	170
4-Chlorophenyl-phenylether	7005-72-3	NS	-	NA	170	NA	170
Fluorene	86-73-7	100,000	10,000	NA	170	NA	170
4-Nitroaniline	100-01-6	NS	-	NA	170	NA	170
4,6-Dinitro-2-methylphenol	534-52-1	NS	-	NA	170	NA	170

QAPP Worksheet #15-2
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Semi-volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDL[3]	Method QL (ug/kg)	MDL[3]	QL (ug/kg) [4]
N-Nitrosodiphenylamine	86-30-6	100,000	10,000	NA	170	NA	170
1,2,4,5-Tetrachlorobenzene	95-94-3	NS	-	NA	170	NA	170
4-Bromophenyl-phenylether	101-55-3	NS	-	NA	170	NA	170
Hexachlorobenzene	118-74-1	100,000	10,000	NA	170	NA	170
Atrazine	1912-24-9	NS	-	NA	170	NA	170
Pentachlorophenol	87-86-5	100,000	10,000	NA	170	NA	170
Phenathrene	85-01-8	NS	-	NA	170	NA	170
Anthracene	120-12-7	100,000	10,000	NA	170	NA	170
Carbazole	86-74-8	NS	-	NA	170	NA	170
Di-n-butylphthalate	84-74-2	100,000	10,000	NA	170	NA	170
Fluoranthene	206-44-0	100,000	10,000	NA	170	NA	170
Pyrene	129-00-0	100,000	10,000	NA	170	NA	170
Butylbenzylphthalate	85-68-7	100,000	10,000	NA	170	NA	170
3,3'-Dichlorobenzidene	91-94-1	100,000	10,000	NA	170	NA	170
Benzo(a)anthracene	56-55-3	500,000	50,000	NA	170	NA	170
Chrysene	218-01-9	500,000	50,000	NA	170	NA	170
bis-(2-Ethylhexyl)phthalate	117-81-7	100,000	10,000	NA	170	NA	170
Di-n-octylphthalate	117-84-0	50,000	5,000	NA	170	NA	170
Benzo(b)fluoranthene	205-99-2	500,000	50,000	NA	170	NA	170
Benzo(k)fluoranthene	207-08-9	100,000	10,000	NA	170	NA	170
Benzo(a)pyrene	50-32-8	100,000	10,000	NA	170	NA	170

QAPP Worksheet #15-2
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: TCL Semi-volatiles

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDL[3]	Method QL (ug/kg)	MDL[3]	QL (ug/kg) [4]
Indeno(1,2,3-cd)pyrene	193-39-5	500,000	50,000	NA	170	NA	170
Dibenzo(a,h)anthracene	53-70-3	100,000	10,000	NA	170	NA	170
Benzo(g,h,I)perylene	191-24-2	NS	-	NA	170	NA	170
2,3,4,6-Tetrachlorphenol	58-90-2	NS	-	NA	170	NA	170

1. Project Action Limits listed are those referenced in the Sevenson QAPP, which are based upon the May 1999 NJDEP IGWSCC. "NS" indicates that there is no criterion listed for this analyte.
2. The Project Quantitation Limits listed are based upon are those referenced in the Sevenson QAPP and were set at one-tenth of the Project Action Limits.
3. NA indicates that the MDLs are not provided in USEPA CLP SOM01.2, but must be low enough to support the QLs.
4. The achievable laboratory limits listed are based upon the USEPA CLP SOM01.2 CRQLs for low concentration soil.

QAPP Worksheet #15-3
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: Pesticides

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDLs [3]	Method QLs	MDLs [3]	QLs (ug/kg) [4]
alpha-BHC	319-84-6	NS	-	NA	1.7	NA	1.7
beta-BHC	319-85-7	NS	-	NA	1.7	NA	1.7
delta-BHC	319-86-8	NS	-	NA	1.7	NA	1.7
gamma-BHC (Lindane)	58-89-9	50,000	5.000	NA	1.7	NA	1.7
Heptachlor	76-44-8	50,000	5,000	NA	1.7	NA	1.7
Aldrin	309-00-2	50,000	5,000	NA	1.7	NA	1.7
Heptachlor epoxide	1024-57-3	NS	-	NA	1.7	NA	1.7
Endosulfan I	959-98-8	50,000	5,000	NA	1.7	NA	1.7
Dieldrin	60-57-1	50,000	5,000	NA	3.3	NA	3.3
4,4'-DDE	72-55-9	50,000	5,000	NA	3.3	NA	3.3
Endrin	72-20-8	50,000	5,000	NA	3.3	NA	3.3
Endosulfan II	33213-65-9	NS	-	NA	3.3	NA	3.3
4,4'-DDD	72-54-8	50,000	5,000	NA	3.3	NA	3.3
Endosulfan sulfate	1031-07-8	NS	-	NA	3.3	NA	3.3
4,4'-DDT	50-29-3	500,000	50,000	NA	3.3	NA	3.3
Methoxychlor	72-43-5	50,000	5,000	NA	17.0	NA	17.0
Endrin ketone	53494-70-5	NS	-	NA	3.3	NA	3.3
Endrin aldehyde	7421-93-4	NS	-	NA	3.3	NA	3.3
alpha-Chlordane	5103-71-9	NS	-	NA	1.7	NA	1.7
gamma-Chlordane	5103-74-2	NS	-	NA	1.7	NA	1.7
Toxaphene	8001-35-2	50,000	5,000	NA	17.0	NA	17.0

1. Project Action Limits listed are those referenced in the Sevenson QAPP, which are based upon the May 1999 NJDEP IGWSCC. "NS" indicates that there is no criterion listed for this analyte.
2. The Project Quantitation Limits listed are based upon are those referenced in the Sevenson QAPP and were set at one-tenth of the Project Action Limits.
3. NA indicates that the MDLs are not provided in USEPA CLP SOM01.2, but must be low enough to support the QLs.
4. The achievable laboratory limits listed are based upon the USEPA CLP SOM01.2 CRQLs for low concentration soil.

Reference Limits and Evaluation Table

QAPP Worksheet #15-4
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: PCBs

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit (ug/kg)	Project Quantitation Limit [2] (ug/kg)	Analytical Method		Achievable Laboratory Limits	
				MDLs [3]	QLs	MDLs [3]	QLs(ug/kg) [4]
Aroclor 1016	12674-11-2	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1221	11104-28-2	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1232	11141-16-5	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1242	53469-21-9	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1248	12672-29-6	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1254	11097-69-1	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1260	11096-82-5	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1262	37324-23-5	Note 1	33.0	NA	33.0	NA	33.0
Aroclor 1268	11100-14-4	Note 1	33.0	NA	33.0	NA	33.0
Total PCB (Sum of all the Aroclors)		10,000 to 500000 (Note 1)					

1. The May 1999 NJDEP IGWSCC for total PCBs is 50,000 ug/kg. The ROD has an action limit of 500,000 ug/kg PCBs for off-Site disposal or treatment with a project remediation goal of 10,000 ug/kg. Per the Sevenson Sample and Analysis Plan soils with PCB concentrations as low as 2000 ug/kg may also be subject to Engineering Controls.
2. The Project Quantitation Limits listed are based upon the SOM0.12 CRQLs.
3. NA indicates that the MDLs are not provided in USEPA CLP SOM01.2, but must be low enough to support the QLs.
4. The achievable laboratory limits listed are based upon the USEPA CLP SOM01.2 CRQLs for soil.

QAPP Worksheet #15-5
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: Inorganics - TAL Metals and Cyanide

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (mg/kg)	Project Quantitation Limit [2] (mg/kg)	Analytical Method Methods		Achievable Laboratory Limits	
				MDLs	Method QLs	MDLs [3]	QLs (mgkg) [4]
Aluminum	7429090-5	NS	20	NA	20	NA	20
Antimony	7440-36-0	NS	6	NA	6	NA	6
Arsenic	7440-38-2	NS	1	NA	1	NA	1
Barium	7440-39-3	NS	20	NA	20	NA	20
Beryllium	7440-41-7	NS	0.5	NA	0.5	NA	0.5
Cadmium	7440-43-9	NS	0.5	NA	0.5	NA	0.5
Calcium	7440-70-2	NS	500	NA	500	NA	500
Chromium	7440-47-3	NS	1	NA	1	NA	1
Cobalt	7440-48-4	NS	5	NA	5	NA	5
Copper	7440-50-8	NS	2.5	NA	2.5	NA	2.5
Iron	7439-89-6	NS	10	NA	10	NA	10
Lead	7439-92-1	NS	1	NA	1	NA	1
Magnesium	7439-95-4	NS	500	NA	500	NA	500
Manganese	7439-96-5	NS	1.5	NA	1.5	NA	1.5
Mercury	7439-97-6	NS	0.1	NA	0.1	NA	0.1
Nickel	7440-02-0	NS	4	NA	4	NA	4
Potassium	7440-09-7	NS	500	NA	500	NA	500
Selenium	7782-49-2	NS	3.5	NA	3.5	NA	3.5
Silver	7440-22-4	NS	1	NA	1	NA	1

QAPP Worksheet #15-5
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Pre-Excavation Soil, Post-Excavation Soil, Post-Treatment Soil)

Analytical Group: Inorganics - TAL Metals and Cyanide

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit [1] (mg/kg)	Project Quantitation Limit [2] (mg/kg)	Analytical Method Methods		Achievable Laboratory Limits	
				MDLs	Method QLs	MDLs [3]	QLs (mgkg) [4]
Sodium	7440-23-5	NS	500	NA	500	NA	500
Thallium	7440-28-0	NS	2.5	NA	2.5	NA	2.5
Vanadium	7440-62-2	NS	5	NA	5	NA	5
Zinc	7440-66-6	NS	6	NA	6	NA	6
Cyanide	57-12-5	NS	2.5	NA	2.5	NA	2.5

1. There are no criteria for soils for this project listed in the ROD for inorganic constituents in the Sevenson QAPP. "NS" indicates that there is no criterion listed for this analyte.
2. The project quantitation limits are target QLs based upon the ILM05.4 CRQLs.
3. The MDLs are not provided in ILM05.4, while the method QLs listed are based upon the ILM05.4 CRQLs.
4. The achievable Laboratory Limits listed are based upon the USEPA CLP ILM05.4 CRQLs.

QAPP Worksheet #15-6
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soils (Offsite Backfill and Topsoil)

Analytical Group: Radiological (Screening)

Concentration Level: Unknown

Radionuclides[1]	CAS Number	Project Action Limit [2] (pCi/g)	Project Quantitation Limit (pCi/g) [3]	Analytical Method Methods		Achievable Laboratory Limits	
				MDLs	Method QLs	MDLs [4]	QLs (pCi/g) [4,5]
Uranium-238 (U-238)	7440-61-1	14	1	NA	NA	TBD	1
Radium-226 (Ra-226)	13982-63-3	2	0.2	NA	NA	TBD	0.2
Thorium 232 (Th-232)	744—29-1	2	0.1	NA	NA	TBD	0.1

1. As discussed with USACE, a practical means of screening backfill will be utilized for evaluating Radionuclides. This includes evaluation of a reduced list of those given in NJACE 78:12 Table 1A. The radiochemistry lab may measure alternative Radionuclides (assuming the Uranium present is in the natural state) to screen for the presence of the Radionuclides listed. The comparison of the radiological data from the split sample will need to take this under consideration.
2. The action limits listed are based upon the concentrations (assuming an average backfill soil depth of 6 feet) given in Table 1A of NJACE 78:12 for the listed analytes. (These will potentially be adjusted, based upon the Sevenson Final QAPP.)
3. The project quantitation limits are target QLs based upon one tenth the action limits.
4. The MDLs and QLs are generally not presented for radiological methods, since sensitivity can be adjusted by varying counting times and sample geometry.
5. The assigned radiochemistry lab will be requested adjust the instrument conditions such as the counting time(s) to meet the required project quantitation limits.

QAPP Worksheet #15-7
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soil

Analytical Group: TCL Dioxins/Furans

Concentration Level: Unknown

Analyte	CAS Number	Project Action Limit (ng/kg) [1]	Project Quantitation Limit (ng/kg) [2]	Analytical Method		Achievable Laboratory Limits	
				MDL [3]	QL	MDL [3]	QL (ng/kg) [4]
2,3,7,8-TCDD	1746-01-6	Note 1	1	NA	1	0.2	1
1,2,3,7,8-PeCDD	40321-76-4	Note 1	5	NA	5	0.54	5
1,2,3,6,7,8-HxCDD	57653-85-7	Note 1	5	NA	5	0.64	5
1,2,3,4,7,8-HxCDD	39227-28-6	Note 1	5	NA	5	0.5	5
1,2,3,7,8,9-HxCDD	19408-74-3	Note 1	5	NA	5	0.54	5
1,2,3,4,6,7,8-HpCDD	35822-46-9	Note 1	5	NA	5	0.5	5
OCDD	3268-87-9	Note 1	10	NA	10	4.82	10
2,3,7,8-TCDF	51207-31-9	Note 1	1	NA	1	0.14	1
1,2,3,7,8-PeCDF	57117-41-6	Note 1	5	NA	5	0.5	5
2,3,4,7,8-PeCDF	57117-31-4	Note 1	5	NA	5	0.5	5
1,2,3,6,7,8-HxCDF	57117-44-9	Note 1	5	NA	5	0.5	5
1,2,3,7,8,9-HxCDF	72918-21-9	Note 1	5	NA	5	0.5	5
1,2,3,4,7,8-HxCDF	70648-26-9	Note 1	5	NA	5	0.5	5
2,3,4,6,7,8-HxCDF	60851-34-5	Note 1	5	NA	5	0.5	5
1,2,3,4,6,7,8-HpCDF	67562-39-4	Note 1	5	NA	5	0.5	5
1,2,3,4,7,8,9-HpCDF	55673-89-7	Note 1	5	NA	5	0.5	5
OCDF	39001-02-0	Note 1	10	NA	10	0.5	10
Dioxin TEQ		5,000 (see Note 1)					

1. The project action level is based upon the ROD; the USEPA site remediation goal for Dioxin Toxic Equivalent (TEQ) is 5 ppb or 5,000 ng/kg in soils. Dioxin TEQ is calculated by multiplying the concentration of the World Health Organization (WHO) listed PCDDs and PCDFs by their Toxic Equivalency Factors (TEFs). (Total TEQ would also include the concentration of the twelve WHO dioxin-like PCB congeners multiplied by their associate TEFs.)
2. The project quantitation limits are based upon USEPA CLP contract CRQLs given in USEPA CLP SOW DLM02.0.

3. NA indicates that the MDLs are not provided in the method, but must be low enough to support the QLs. For these parameters the lab will report sample specific detection limits.
4. The MDLs listed are based upon Test America West Sacramento MDL studies for method SW846-8290.
5. The achievable Laboratory Limits listed are based upon USEPA CLP Contract Required Detection Limits and are the same for method SW846-8290. The achievable QLs are anticipated to be well below the action limit.

QAPP Worksheet #16
(UFP-QAPP Manual Section 2.8.2)

Project Schedule Timeline Table

Activities	Organization	Dates		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Planning and Development of Data Quality Objectives	Malcolm Pirnie	Completed	Completed	Project Quality Objectives	March 2009
Lab Procurement	Malcolm Pirnie	April 2009	September 2009	Labs assigned for split sample task	Prior to split sample collection
Preparation of the QAPP and the testing QA requirements	Malcolm Pirnie	March 2009	August 2009	QAPP (this document)	August 2009
Collection of split soil samples and submission for analysis	Malcolm Pirnie	Fall 2009 (Dependent upon Sevenson schedule)	2010 (Dependent upon Sevenson schedule)	Split Sample Analyses	When verification samples are collected
Laboratory Data Analyses	Laboratories assigned by USEPA-CLP	Fall 2009 (Dependent upon Sevenson schedule)	2 days after samples are received by the lab (Except for Dioxin/Furan data)	Preliminary data	Per Worksheet 30
Data Review	Malcolm Pirnie, USACE and USEPA Region 2	Fall 2009 (Dependent upon the Sevenson schedule)	After both data sets are received	Comparison to the Sevenson data	Initial comparison as soon as preliminary data from both labs are received
Final Report	Malcolm Pirnie	Fall 2010	After all the split sample data and Sevenson data has been received and validated	Comparison to the Sevenson data	First half 2011

Note: A more detailed project schedule is maintained by the USACE and Malcolm Pirnie Inc. PMs. An up to date copy of the Project Schedule will be available to the project team members.

QAPP Worksheet #17
(UFP-QAPP Section 3.1.1)

Sampling Design and Rationale

Data needs include collection and analysis of representative split samples from the samples to be collected by Sevenson. The soil split samples will be randomly collected, with direction from the USACE site personnel, from approximately 10% of the Post-Excavation samples and Post-LTTD treatment samples collected by Sevenson. The Post-Excavation and Post-LTTD split samples will be analyzed for PCB Aroclors, Organochlorine Pesticides, VOCs, SVOCs, and TAL Metals and Cyanide. Selected samples will also be analyzed for PCDDs/PCDFs. At least one split sample will also be analyzed for PCDDs/PCDFs from the Pre-Excavation at SB-39, which is an area where dioxins have previously been detected. At least one split sample of backfill and topsoil will be collected for radiological screening. The details of the Sevenson sampling design and the locations for collection of the individual soil samples are not provided in the Sevenson QAPP and FSP; these will be determined as the program progresses.

Split samples should be collected and processed in a manner so they are as representative as possible of the primary samples collected by Sevenson. Samples for VOC analyses will be collected as grab samples using Encore samplers by Sevenson personnel directly from the soil per their approved QAPP and Section 4 of their approved FSP. Split soil samples for VOCs must also be collected using Encore samplers from an area as close as possible to the location where the primary VOC grab samples were obtained so they are representative of the same sample material.

The remainder of the soil sample will then be homogenized in a decontaminated steel bowl by Sevenson personnel. This material must be well mixed prior to obtaining a split sample. Per Section 4.0 of the Sevenson FSP, homogenization will be conducted using a decontaminated stainless steel spoon or spatula. The soil should be scrapped from the sides, corners, and bottom, rolled into the middle of the bowl, and mixed. The soil should then be quartered (i.e. divided into four sections) and moved to the sides of the bowl. Each quarter should then be mixed individually, and then rolled into the middle of the bowl and mixed with the entire sample again. These steps of quartering the soil, mixing individually, and then mixing the sample again should be repeated at least twice. The goal of the homogenization is to achieve a consistent physical appearance over the entire soil sample.

The soil samples and the associated split samples should then be transferred to clean sample jars using a clean decontaminated stainless steel spoon or spatula. The person observing the split sample collection should confirm that any split samples obtained from Sevenson are representative of the primary samples.

QAPP Worksheet #18
(UFP-QAPP Manual Section 3.1.1)

Sampling Locations and Methods/SOP Requirements Table

Sampling Location/ID Number	Matrix	Depth ( )	Analytical Group	Concentration Level	Est. Number of Samples (identify field duplicates	Sampling SOP Reference	Rationale for Sampling Location
Post Excavation Split Samples Note 1	Soil	Note 1	TAL Metals	Low	Est. 55 Samples Notes 1 and 2	Note 1	Note 1
Post Excavation Split Samples Note 1	Soil	Note 1	TCL Volatiles	Low	Est. 55 Samples Notes 1 and 2	Note 1	Note 1
Post Excavation l Split Samples Note 1	Soil	Note 1	TCL Semi-Volatiles	Low	Est. 55 Samples Notes 1 and 2	Note 1	Note 1
Post Excavation l Split Samples Note 1	Soil	Note 1	PCB Aroclors	Low	Est. 55 Samples Notes 1 and 2	Note 1	Note 1
Post Excavation l Split Samples Note 1	Soil	Note 1	Organochlorine Pesticides	Low	Est. 55 Samples Notes 1 and 2	Note 1	Note 1
Post Excavation l Split Samples Note 1	Soil	Note 1	Dioxins/Furans	Low	Est. 55 Samples or fewer Notes 1 and 2	Note 1	Note 1
Post-LTTD Split Samples, Note 1	Soil	Note 1	TAL Metals	Low	Est. 26 Samples Notes 1 and 2	Note 1	Note 1
Post-LTTD Split Samples, Note 1	Soil	Note 1	TCL Volatiles	Low	Est. 26 Samples Notes 1 and 2	Note 1	Note 1
Post-LTTD Split Samples, Note 1	Soil	Note 1	TCL Semi-Volatiles	Low	Est. 26 Samples Notes 1 and 2	Note 1	Note 1
Post-LTTD Split Samples, Note 1	Soil	Note 1	PCB Aroclors	Low	Est. 26 Samples Notes 1 and 2	Note 1	Note 1
Post-LTTD Split Samples, Note 1	Soil	Note 1	Organochlorine Pesticides	Low	Est. 26 Samples Notes 1 and 2	Note 1	Note 1

Sampling Locations and Methods/SOP Requirements Table

Sampling Location/ID Number	Matrix	Depth ( )	Analytical Group	Concentration Level	Est. Number of Samples (identify field duplicates	Sampling SOP Reference	Rationale for Sampling Location
Post-LTTD Split Samples, Note 1	Soil	Note 1	Dioxins/Furans	Low	Est. 26 Samples or fewer Notes 1 and 2	Note 1	Note 1
Pre-Excavation at SB39	Soil	Note 1	Dioxins/Furans	Low	At least one, plus a duplicate Notes 1 and 2	Note 1	Note 1
Backfill. (Note 1)	Soil	Note 1	Radiological	NA	At least one Notes 1 and 2	Note 1	Note 1

1. Since this is a split sample analysis program, information on the sample locations is not covered in the QAPP. The Sevenson QAPP also does not include these details at this time; exact locations will be determined as the program progresses.
2. Field duplicates will be requested for every 20 samples.
3. Additional split samples may be collected as instructed by the USACE.

QAPP Worksheet #19
(UFP-QAPP Manual Section 3.1.1)

Analytical SOP Requirements Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference [1]	Sample Volume/Mass per Analysis [3]	Containers (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Soil	TAL Metals and Cyanide	Low	ILM05.4	Typically 100 g	16 oz. Glass Jar	Cool to 4 °C or (2 to 6° C)	28 days for mercury and 180 days for the other metals or applicable CLP requirements
	TCL Volatiles	Low	SOM01.2	3 x 5g Encore Devices (9 x 5 g Encore should be submitted at least once for QC) .	3 x 5 g En Core™ (9 x 5g En Core for QC)[2]	Cool to 4 °C or (2 to 6° C)	48 hours to extraction or freezing and 14 days to analysis or applicable CLP requirements
	TCL Semi-Volatiles	Low	SOM01.2	Typically 30 g	8 oz. Glass, Amber Jar	Cool to 4 °C or (2 to 6° C)	14 days to extraction, 40 days to analysis or applicable CLP requirements
	PCBs as Aroclors	Low to High	SOM01.2	Typically 30 g	4 oz. Glass, Amber Jar		
	Organochlorine Pesticides	Low	SOM01.2	Typically 30 g	4 oz. Glass, Amber Jar		
	Polychlorinated Dioxins/Furans	Low	SW846-8290 or DLM02.0	Typically 30 g	4 oz. Glass, Amber Jar	Cool to 4 °C or (2 to 6° C)	Extract within 30 days and completely analyzed within 45 days of extraction or per the applicable CLP requirements.
	Radiological	Low	HASL 300 or equivalent	500 g	32 oz. Glass or Plastic	None	180 days

1. If the USEPA Region 2 DESA lab is assigned to perform the analyses they will follow their own SOPs.
2. Normally three Encores are required per sample, but 9 Encores should be obtained on at least one sample to provide sufficient sample material for the laboratory to perform the required QAs.
3. The lab may request different size samples and containers depending upon their needs.

Q APP Worksheet #20

(UFP-QAPP Manual Section 3.1.1)

The following table summarizes by matrix, analytical group, and concentration level the number of field QC samples that will be collected and sent to the laboratory.

Field Quality Control Sample Summary Table

Matrix	Analytical Group	Conc. Level	Analytical and Preparation SOP Reference[1]	No. of Sampling Locations	No. of Field Duplicate Pairs	Inorganic No. of MS	No. of Field Blanks	No. of Equip. Blanks	No. of PT Sample	Est. No. of Split Samples to Lab
Soil	TAL Metals and Cyanide	Low	ILM05.4	Estimate 81 split sample locations	5% or one per 20 samples of the split samples collected to be analyzed by the same lab	Note 2	NA	NA	NA	10% of Sevenson samples, est. to be 85
Soil	TCL Volatiles	Low	SOM01.2			Once at least 9 Encores for QA	NA	NA	NA	10% of Sevenson samples ,est. to be 85
Soil	TCL Semi-Volatiles	Low	SOM01.2			NA	NA	NA	NA	10% of Sevenson samples, est. to be 85
Soil	PCBs as Aroclors	Low to high	SOM01.2			NA	NA	NA	Est. 8 PT samples[3]	10% of Sevenson samples, est. to be 93
Soil	Organochlorine Pesticides	Low	SOM01.2			NA	NA	NA	NA	10% of Sevenson samples, est. to be 85
Soil	Polychlorinated Dioxins/Furans	Low	SW846-8290 or DLM02.0			NA	NA	NA	Est. 4-8 PT samples[3]	Approx. 5% to 10% of Sevenson samples, est. 46 to 93
Soil	Radiological	Low	HASL 300 or equivalent	Estimate one	1	NA	NA	NA	NA	At least one (plus duplicate)

1. If the USEPA Region 2 DESA lab is assigned to perform the analyses they will follow their own SOPs.
2. A separate sample container is not required for QA analyses, since the lab will take QA samples for soils from the sample container.
3. Performance Testing (PT) samples are analyzed quarterly by CLP laboratories per USEPA CLP SOW requirements. PT samples for PCB Aroclors and Dioxins/Furans are also planned if arrangements can be made to obtain these materials through the USEPA. The intent would be to have the assigned lab periodically analyze PT samples with the split samples. The results of the PT sample analysis would be documented but will not be used to flag data, if all the other QCs required by the USEPA SOW or SW-846 method are met.

QAPP Worksheet #21
(UFP-QAPP Manual Section 3.1.2)

Project Sampling SOP References Table

Reference Number	Title, Revision Date and/or Number	Originating Organization	Equipment Type	Modified for Project Work?	Comments
SOP 1 in Attachment 1	SOP No. 1 Procedure to Conduct Sample Management for CLP and non-CLP Samples, March 2009	Malcolm Pirnie Inc.	Sample Containers, coolers, ice, custody seals, packing materials and COC forms	No	If the split samples are obtained from Sevenson at the site by Malcolm Pirnie personnel.
Form II Lite User's Guide (Only required if samples are submitted to a an assigned CLP lab)	Forms II Lite, Version 5.1 User's Guide, Version 5.1	USEPA	Personal computer, printer, Forms II Lite software, etc.	No	Forms II Lite is required for creating COC forms for USEPA-CLP samples.
See Sevenson Soil Remediation QAPP for a description of the sampling procedures. Sevenson will be requested to provide homogenized split samples (representative of the soil remediation samples being collected) to a Malcolm Pirnie representative or a USACE employee on-site. For VOC samples, co-located grab samples will be provided, collected as close a possible to the samples collected for analysis by Sevenson.					

QAPP Worksheet #22
(UFP-QAPP Manual Section 3.1.2.4)

Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Field Equipment	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
None required Note 1	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note 1: No field equipment will be employed during the split sample program.

QAPP Worksheet #23
(UFP-QAPP Manual Section 3.2.1)

Analytical SOP References Table

Reference Number	Title, Revision Date, and/or Number[1]	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?
ILM05.4	Multi-Media, Multi-Concentration Inorganic Analytical Services for Superfund (ILM05.4)	Definitive	TAL Metals and Cyanide	Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) for metals Cold Vapor Atomic Absorption (CVAA) for mercury Colorimetric for Cyanide	USEPA CLP or DESA Laboratory to be assigned	No
SOM01.2	Multi-Media, Multi-Concentration Organic Analytical Services for Superfund (SOM01.2)	Definitive	TCL Volatiles	Gas Chromatograph-Mass Spectrometer (GC-MS)	USEPA CLP or DESA Laboratory to be assigned	No
SOM01.2	Multi-Media, Multi-Concentration Organic Analytical Services for Superfund (SOM01.2)	Definitive	TCL Semi-Volatiles	GC-MS	USEPA CLP or DESA Laboratory to be assigned	No
SOM01.2	Multi-Media, Multi-Concentration Organic Analytical Services for Superfund (SOM01.2)	Definitive	PCB as Aroclors	GC-Electron Capture Detector (ECD)	USEPA CLP or DESA Laboratory to be assigned	No
SOM01.2	Multi-Media, Multi-Concentration Organic Analytical Services for Superfund (SOM01.2)	Definitive	Pesticides	GC-ECD	USEPA CLP or DESA Laboratory to be assigned	No
846-8290 or DLM02.0	SW846-8290, Polychlorinated Dibenzo-p-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS) or Multi-Media, Multi-Concentration Dioxin and Furan Analytical Services for Superfund (DLM02.0) Or	Definitive	Dioxins/Furans	High Resolution (HR) GC-HRMS	Test America West Sacramento, CA or alternate	No
HASL 300	HASL 300 Procedures Radiochemistry or equivalent methods	Definitive	Radiological	Gamma Spectrometry	OutReach Analytical or alternate	No

1. If the USEPA Region 2 DESA laboratory is assigned as expected, they will follow their own SOPs.

QAPP Worksheet #24
(UFP-QAPP Manual Section 3.2.2)

Analytical Instrument Calibration Table

Instrument	Calibration Procedure [1]	Frequency of Calibration	Acceptance Criteria[1]	Corrective Action [1] (CA)	Person Responsible for CA	SOP Reference[1]
ICP-AES	Per USEPA CLP SOW ILM05.4	Verify with each group of samples	Per USEPA CLP SOW ILM05.4	Per USEPA CLP SOW ILM05.4	Assigned Lab personnel	Per USEPA CLP SOW ILM05.4
CVAA	Per USEPA CLP SOW ILM05.4	Verify with each group of samples	Per USEPA CLP SOW ILM05.4	Per USEPA CLP SOW ILM05.4	Assigned Lab personnel	Per USEPA CLP SOW ILM05.4
Colorimetric methods	Per USEPA CLP SOW ILM05.4	Verify with each group of samples	Per USEPA CLP SOW ILM05.4	Per USEPA CLP SOW ILM05.4	Assigned Lab personnel	Per USEPA CLP SOW ILM05.4
GC-MS	Per USEPA CLP SOW SOM01.2	Verify with each group of samples	Per USEPA CLP SOW SOM01.2	Per USEPA CLP SOW SOM01.2	Assigned Lab personnel	Per USEPA CLP SOW SOM01.2
GC-ECD	Per USEPA CLP SOW SOM01.2	Verify with each group of samples	Per USEPA CLP SOW SOM01.2	Per USEPA CLP SOW SOM01.2	Assigned Lab personnel	Per USEPA CLP SOW SOM01.2
HRGC-HRMS	Per SW846-8290 or USEPA CLP SOW DLM02	Verify with each group of samples	Per SW846-8290 or USEPA CLP SOW DLM02	Per SW846-8290 or USEPA CLP SOW DLM02	Assigned Lab personnel	Per SW846-8290 or USEPA CLP SOW DLM02
Gamma Spectroscopy	HASL 300	Verify with each group of samples	HASL 300/	HASL 300	Assigned Lab personnel	HASL 300/LANL ER200M

1. If the USEPA Region 2 DESA laboratory is assigned, they will follow their own SOPs.

QAPP Worksheet #25
(UFP-QAPP Manual Section 3.2.3)

Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument/ Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
See list of instruments given in Worksheet #24	Per CLP SOW or lab SOP (Note 1)	Per CLP SOW or lab SOP	Per CLP SOW or lab SOP	Per CLP SOW or lab SOP	Per CLP SOW or lab SOP	Investigate problems and confirm that the analytical instruments are in proper calibration	Assigned lab personnel	See methods listed in Worksheets 23 and 24

1. The maintenance of the analytical instruments including the testing activity, inspection activity, frequency, acceptance criteria, responsible person and SOP reference must be documented in the Laboratories' QC Manual(s). Spare parts and maintenance of laboratory analytical instrumentation are the responsibility of the assigned laboratory personnel.

QAPP Worksheet #26
(UFP-QAPP Manual Appendix A)

Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Sevenson Environmental Services will provide the Malcolm Pirnie personnel or USACE personnel on-site with the randomly-selected split samples, representative of 5 to 10% of the final soil samples collected by Sevenson. USACE may also specify locations for split sample collection based on field judgment.
Sample Packaging (Personnel/Organization): Malcolm Pirnie SMO or designee
Coordination of Shipment (Personnel/Organization): Malcolm Pirnie SMO or designee
Type of Shipment/Carrier: Courier to the laboratory, drop-off at lab location, or via Federal Express for Overnight Delivery
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Assigned lab personnel
Sample Custody and Storage (Personnel/Organization): Assigned lab personnel
Sample Preparation (Personnel/Organization): Assigned lab personnel
Sample Determinative Analysis (Personnel/Organization): Assigned lab personnel
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): Samples will not be stored in the field, but will be shipped within 24 hours of collection. If in an emergency they are stored in the field, they will be kept in cooler(s) or transferred to a refrigerator kept at 4 degrees C.
Sample Extract/Digestate Storage (No. of days from extraction/digestion): Sample extraction and digestion must be conducted according to the methods and the requirements given in Worksheet 19.
Biological Sample Storage (No. of days from sample collection): NA
SAMPLE DISPOSAL
Personnel/Organization: Lab Sample Custodians
Number of Days from Analysis: At least 60 days

Sample Handling and Custody

Sample custody procedures ensure the timely, correct, and complete analysis of each sample for all parameters requested. A sample is considered to be in someone's custody if it:

- Is in his/her possession.
- Is in his/her view, after being in his/her possession.
- Is in his/her possession and has been placed in a secured location.
- Is in a designated secure area.

Sample custody documentation provides a written record of sample collection and analysis. The sample custody procedures provide for specific identification of samples associated with an exact location, the recording of pertinent information associated with the sample, including time of sample collection and any preservation techniques, and a COC record which serves as physical evidence of sample custody. Custody procedures will be similar to the procedures outlined in the USEPA's Contract Laboratory Program Guidance for Field Samplers (USEPA, 2004). The COC documentation system provides the means to individually identify, track, and monitor each sample from the time of collection through final data reporting. Sample custody procedures are developed in three areas: sample collection, laboratory analysis, and final evidence files, which are described below. See Attachment 4.1 for a copy of SOP No. HW-32, Implementing The National Strategy For Procuring Analytical Services For All OSWER Programs issued in 2005. It includes the Region 2 requirements for obtaining analytical services for Superfund projects, outlines the arrangements that must be made through the Region 2 Regional Sample Control Coordinator (RSCC) and gives example forms which to be submitted. Attachment 4.2 is a copy of the Analytical Services request form which must be submitted to the RSCC.

Field Sample Handling and Custody

Field records provide a means of recording information for each field activity performed at the Site. COC procedures document pertinent sampling data and all transfers of custody until the samples reach the analytical laboratory. The sample packaging and

shipment procedures summarized below will ensure that the samples arrive at the laboratory with the COC intact. Refer to SOP No. 1 in Attachment 1 for sample management information. Worksheet 19 lists the specific sample preservation requirements for each test method.

Sample Identification System

All samples collected from the Site must be identified with a sample label in addition to an entry on a COC record. Indelible ink will be used to complete sample labels and handwritten COC records. COCs for all CLP samples must be generated using Forms II Lite software. CLP Samples will be assigned a CLP sample number by the Forms II Lite software. Hand written COC forms provided by the subcontract laboratory will be completed for non-CLP samples. In addition, each soil sample shall be identified by a unique sample number. The sample identification used will be the sample number provided by Sevenson with the letters "MPI" added after the Sevenson sample number. Any sample designated as a field duplicate sample will not have any special designation that is a variation of the numbering system, but will be "blind" labeled with a fictitious sample number. The fictitious number and the identification of the associated sample will be recorded in the field logbook.

QAPP Worksheet #27
(UFP-QAPP Manual Section 3.3.3)

Chain of Custody Procedure

When samples are being submitted to an EPA-CLP laboratory, the COC must be generated as per EPA's Forms II Lite software. Each CLP sample will have a CLP number assigned in addition to the field sample identification number. Refer to the USEPA CLP Guidance for Field Samplers for more detailed guidance regarding shipment of CLP samples.
(See http://dyncsdao1.fedcsc.com/itg/forms2lite/documents/51docs/UserGuide51.pdf)

Manual COC forms should only be used for this project if problems are encountered in the field preventing the use of Forms II Lite. If manual COC forms are used they should be signed in ink. The following information is typically recorded on manual COC forms:

- Project name and/or project number
- Signature of SMO or designee
- Sampling station number
- Date and time of collection
- Sample designation
- Sample matrix
- Sampling location description
- Field identification number
- Analyses required
- Preservation technique

- Signatures and dates for transfers of custody
- Air express/shipper's bill of lading identification numbers

An example COC form is included in the USEPA Contract Laboratory Guidance for Field Samplers.

The COC form serves as an official communication to the laboratory detailing the particular analyses required for each sample. The COC record will accompany the samples from the time of sampling through all transfers of custody. It will be kept on file at the laboratory where samples are analyzed and archived. The SMO or designee completes a COC record to accompany each shipment from the field to the laboratory. In the case of CLP samples, a copy of the COC created by Forms II Lite must also be sent to the EPA CLP Region 2 coordinator.

The completed COC is put in a zip-lock bag and taped to the inside cover of the sample shipping container. If there is more than one container in a shipment, copies of the COC forms will be placed in each container. The container is then sealed with custody seals and custody is transferred to the laboratory.

Transfer of Custody and Shipment

The custody of samples must be maintained from the time of sampling through shipment and relinquishment to the laboratory. Instructions for transferring custody are given below:

- All samples are accompanied by a COC. When transferring custody of samples, the individuals relinquishing and receiving will sign, date, and note the time on the COC. This form documents sample custody transfer from the SMO or designee, through the shipper, to the analytical laboratory. Since a common carrier will usually not accept responsibility for handling COC forms, the name of the carrier is entered under "Received by," the bill-of-lading number is recorded in the comments section, and the COC form is placed in a zip-lock plastic bag and taped to the inside lid of the lead shipping cooler. Copies of the COC forms will be placed in each additional cooler in a shipment.

- Samples will be packaged for shipment and either picked up at the Site by the laboratory or dispatched to the appropriate laboratory via overnight delivery service. SOP No. 1 in Attachment 1 contains the proper sample packaging techniques and per the USEPA CLP Guidance for Field Samplers. A separate COC record must accompany each shipment. Custody seals will be placed on each sample jar. The jar will then be put in a plastic bag and packaged for shipment/ dispatch to the appropriate CLP lab via overnight service. Shipping containers will be sealed for shipment to the laboratory. Four custody seals will be applied to each cooler to document that the container was properly sealed and to determine if the container was tampered with during shipment. The custody seals will be placed on the coolers in such a manner that the custody seal would be broken if the cooler were opened (*i.e.*, diagonally opposite corners of the cooler lid).

- The original COC and a copy for CLP laboratory(ies) will accompany the shipment. A copy will also be retained by the Field Team Leader.

- If the samples are sent by common carrier or air freight, proper documentation must be maintained. For example, the bill of lading must be retained by the Field Team Leader.

Laboratory Custody Procedures

The laboratory custody procedures will be equivalent to those described in the latest version of the CLP SOW. The following will be addressed in the laboratory custody SOPs:

- A designated sample custodian accepts custody of the samples and verifies that the information on the sample labels matches the information on the COC. The sample custodian will document any discrepancies and will sign and date all appropriate receiving documents. The sample custodian will also document the condition of the samples upon receipt at the laboratory. The CLP laboratories will send a copy of the sample receipt checklist to USEPA's RSCC, while the subcontract laboratories will complete the form and return it electronically.

- Once the samples have been accepted by the laboratory, checked and logged in, they must be maintained in accordance with laboratory custody and security requirements.

- To ensure traceability of samples while in the possession of the laboratory, a method for sample identification that has been documented in a laboratory SOP will be used to assign sample numbers.

- The following stages of analysis must be documented by the laboratory:
    - Sample Extraction/Preparation.
    - Sample Analysis.
    - Data Reduction.
    - Data Reporting.

- Laboratory personnel are responsible for the custody of samples until they are returned to the sample custodian.

- When sample analyses and QA checks have been completed in the laboratory, the used portion of the sample must be stored or disposed of in accordance with the protocols specified in the CLP SOW or the subcontract agreement. Identifying labels, data sheets, COCs, and laboratory records will be retained until analyses and QA checks are completed in accordance with the protocols specified in the CLP SOW or the subcontract agreement.

Final Evidence Files

This is the final phase of sample custody. The COC records and sample analysis request form copies are archived in their respective project files. Laboratory custody forms, sample preparation and analysis logbooks, and data packages will become part of the laboratory final evidence file. Other relevant documentation including records, reports, and correspondence, logs, pictures, and data review reports will be archived by Malcolm Pirnie.

Sample Holding Times

Information on sample holding times and required preservation for each test method are provided in Worksheet 19.

QAPP Worksheet #28-1
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Inorganics TAL Metals and Cyanide
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	ILM05.4
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Field Duplicates of of split samples analyzed by the same lab	1 per 20 field samples per matrix	QAPP	If the RPDs exceed limits for the field replicate this will be addressed by the Malcolm Pirnie Data Reviewer and the reason for the deviation will be investigated.	Malcolm Pirnie Field Team Leader and or Laboratory	Precision	RPD <35% for duplicate values greater than or equal to 5 times the CRQL
Continuing calibration verification	For each wavelength or mass used, at a frequency of 10% or every two hours of a run and at the beginning and end of each run.	ILM05.4	Correct problem, recalibrate and re-analyze the affected samples	Assigned Lab	Accuracy/Bias	Recovery 90-110% or per requirements in ILM05.4
MB	Each batch of samples not to exceed 20 samples	ILM05.4	Re-prepare blank and reanalyze	Assigned Lab	Accuracy/ Sensitivity	Less than CRQLs
LCS	Each group of samples digested	ILM05.4	Redigest and reanalyze	Assigned Lab	Accuracy/Bias	Recovery of 75-125% or per ILM05.4

QAPP Worksheet #28-1
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Inorganics TAL Metals and Cyanide
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	ILM05.4
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
MS	Each matrix type and each Sample Delivery Group (SDG)	ILM05.4	Investigate possible matrix effect. Record in case narrative.	Assigned Lab	Accuracy/Bias	Recovery of 75-125% or per ILM05.4
Laboratory Duplicate	Each batch of 20 samples of less	ILM05.4	Investigate problem, reanalyze	Assigned Lab	Precision	RPD < 20% for duplicate values greater than or equal to 5 times the QLs
MDLs	Annually	ILM05.4	Determine before analyzing samples	Assigned Lab	Sensitivity	Per ILM05.4 and low enough to support QLs

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The assigned laboratory also must perform all the QC sample analyses and meet all the measurement performance criteria that assess the analytical DQIs specified in ILM05.4.

QAPP Worksheet #28-2
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	TCL Volatiles
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Field Duplicates of split samples analyzed by the same lab	1 per 20 field samples	QAPP	If the RPDs exceed limits for the field replicate this will be addressed by the Data Reviewer	Malcolm Pirnie Field Team Leader and or Laboratory	Precision	RPD <35% for duplicate values greater than or equal to 5 times the QL
Continuing calibration verification	Every 12 hours of analysis	SOM01.2	Correct, re-calibrate if necessary	Assigned lab	Accuracy/Bias	Per_SOM01.2, less than 20% difference
MB	Once every 12 hour for each instrument	SOM01.2	Correct before analyzing samples	Assigned lab	Accuracy/ Sensitivity	Less than CRQLs, Reference USEPA Region 2 SOP No.34/Trace VOA-Blank Type Criteria Table
Deuterated Monitoring Compounds	Every sample, blank, QC sample	SOM01.2	Correct, re-prepare and re-analyze	Assigned lab	Accuracy/Bias	Recoveries per requirements in SOM01.2 Exhibit D, Table 5
Internal standard	Every sample, blank, QC sample	SOM01.2	Correct as appropriate	Assigned lab	Accuracy/Bias	Area change -50% to +100% Retention times with +30 seconds of calibration

QAPP Worksheet #28-2
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	TCL Volatiles
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
MDLs	Annual	SOM01.2	Determine before analyzing samples	Assigned Lab	Sensitivity	Per requirements in SOM01.2, low enough to support QLs

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The assigned laboratory also must perform all the QC sample analyses and meet all the measurement performance criteria that assess the analytical DQIs specified in USEPA SOM01.2.

QAPP Worksheet #28-3
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	TCL SVOCs
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Field Duplicates of split samples analyzed by the same lab	1 per 20 field samples	QAPP	If the RPDs exceed limits for the field replicate this will be addressed by the Data Reviewer	Malcolm Pirnie and or Laboratory	Precision	RPD <35% for SVOCs for duplicate values greater than or equal to 5 times the QL
Continuing calibration verification	Every 12 hours of analysis	SOM01.2	Correct, re-calibrate if necessary	Assigned lab	Accuracy/Bias	Per SOM01.2 Exhibit D, Table 4
MB	Every batch of samples	SOM01.2	Re-extract and re-analyze samples affected	Assigned lab	Accuracy/ Sensitivity	less than CRQLs or per SOM01.2
Deuterated Monitoring Compounds	Every sample, blank, QC sample	SOM01.2	Correct, re-prepare and re-analyze affected samples	Assigned lab	Accuracy/Bias	Recoveries per requirements in SOM01.2 Exhibit D Table 6
Internal Standards	Every sample, blank, QC sample	SOM01.2	Correct, re-prepare and re-analyze affected samples	Assigned lab	Accuracy/Bias	Recoveries per requirements in SOM01.2, Exhibit D
MDLs	Annual	SOM01.2	Determine before analyzing samples	Assigned lab	Sensitivity	Per requirements in SOM01.2, low enough to support QLs

QAPP Worksheet #28-3
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	TCL SVOCs
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The assigned laboratory also must perform all the QC sample analyses and meet all the measurement performance criteria that assess the analytical DQIs specified in USEPA SOM01.2.

QAPP Worksheet #28-4
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	PCB Aroclors
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Field Duplicates of split samples analyzed by the same lab	1 per 20 field samples per matrix	QAPP	If the RPDs exceed limits for the field replicate this will be addressed by the Data Reviewer	Assigned lab	Precision	RPD <35% for duplicate values greater than or equal to 5 times the QL
Continuing Calibration Verification	Each column every 12 hours of analysis	SOM01.2	Investigate, re-calibrate if necessary	Assigned lab	Accuracy/Bias	Aroclor 1060/1260 standard within less than +/-15% drift. Retention times within windows
MB	Every batch of 20 or fewer samples	SOM01.2	Investigate and correct before analyzing samples	Assigned lab	Accuracy/ Sensitivity	No analyte >CRQLs, Reference USEPA Region 2 SOP No. 37 Low/Medium Aroclor- Blank Types Criteria Table

QAPP Worksheet #28-4
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	PCB Aroclors
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Surrogate Standards	All samples, blanks, and QA samples	SOM01.2	Re-extract and reanalyze or if no more sample volume flag data	Assigned lab	Accuracy/Bias	Recovery per SOM01.2 Exhibit D
MS/MSD	Each column every 20 or fewer samples	SOM01.2	Investigate, re-prepare and re-analyze	Assigned lab	Accuracy Precision	Per recoveries and RPD requirements in SOM01.2 Exhibit D Table 1
LCS	Every 20 or fewer samples	SOM01.2	Re-extract and re-analyze the samples	Assigned lab	Accuracy/Bias	Per recoveries requirements in SOM01.2 Exhibit D Table 2
MDLs	Annually	SOM01.2	Method detection limits must be determined before samples are analyzed	Assigned lab	Sensitivity	Per recoveries requirements in SOM01.2 , low enough to support QLs

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The assigned laboratory also must perform all the QC sample analyses and meet all the measurement performance criteria that assess the analytical DQIs specified in USEPA SOM01.2.

QAPP Worksheet #28-5
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Pesticides
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Field Duplicates of split samples analyzed by the same lab	1 per 20 field samples per matrix	QAPP	If the RPDs exceed limits for the field replicate this will be addressed by the Data Reviewer	Assigned lab	Precision	RPD <35% for duplicate values greater than or equal to 5 times the QL
MB	Every batch of 20 or fewer samples	SOM01.2	Investigate and correct before analyzing samples	Assigned lab	Sensitivity	No analyte > CRQLs
Surrogate Standards	All samples, blanks, and QA samples	SOM01.2	Re-extract and reanalyze or if no more sample volume, flag data	Assigned lab	Accuracy/Bias	Recoveries per SOM01.2 Exhibit D
MS/MSD	Every 20 or fewer samples	SOM01.2	Normally include re-preparation and re-analyses	Assigned lab	Accuracy/Bias/ Precision	Recoveries and RPD per SOM01.2 Exhibit D, Table 3
LCS	Every 20 or fewer samples	SOM01.2	Re-extract and re-analyze the samples	Assigned lab	Accuracy/Bias	Recoveries per SOM01.2 Exhibit D , Table 2

QAPP Worksheet #28-5
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Pesticides
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Assigned CLP lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
MDLs	Annually	SOM01.2	Method detection limits must be determined before samples are analyzed	Assigned lab	Sensitivity	Per requirements in SOM01.2 , low enough to support QLs

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The assigned laboratory also must perform all the QA/QC sample analyses and meet all the measurement performance criteria that assess the analytical DQIs specified in USEPA SOM01.2.

QAPP Worksheet #28-6
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Dioxins/Furans
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SW846-8290 (Test America SOP WS-ID-0005) or DLM02.0
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Test America West Sacramento or other Assigned lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria[2]
Field Duplicates of split samples analyzed by the same lab	1 per 20 field samples per matrix	QAPP	If the RPDs exceed limits for the field replicate this will be addressed by the Data Reviewer	Data Reviewer	Precision	RPD <35% for duplicate values greater than or equal to 5 times the QL
Performance Checks	Every 12 hours	SW846-8290 (Test America SOP WS-ID-0005)	Investigate and correct before analyzing samples. Reanalyze any affected samples.	Assigned lab	Accuracy/Bias	Per SW846-8290 and lab SOP WS-ID-0005
Calibration Verification	Prior to analyzing samples and after each batch	SW846-8290 (Test America SOP WS-ID-0005)	Investigate and correct before analyzing samples. Reanalyze any affected samples.	Assigned lab	Accuracy/Bias	No more than 25% RPD for 17 unlabelled compounds and 35% RPD for 9 labeled reference compounds

QAPP Worksheet #28-6
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Dioxins/Furans
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SW846-8290 (Test America SOP WS-ID-0005) or DLM02.0
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Test America West Sacramento or other Assigned lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria[2]
Method Blank	Every batch of 20 or fewer samples	SW846-8290 (Test America SOP WS-ID-0005)	Investigate and correct before analyzing samples. Reanalyze any affected samples.	Assigned lab	Accuracy/ Sensitivity	Less than QLs
Internal Standards	Every sample	SW846-8290 (Test America SOP WS-ID-0005)	Check calculations Ensure instrument performance is acceptable Recalculate data and or reanalyze	Assigned Lab	Accuracy/Bias	Recovery 40-135% for all nine internal standards
LCS	Every batch of 20 samples	SW846-8290 (Test America SOP WS-ID-0005)	Re-extract and re-analyze the samples	Assigned lab	Accuracy/Bias	Recovery 70-130% or per lab control limits
MDLs	Annually	SW846-8290 (Test America SOP WS-ID-0005)	Method detection limits must be determined before samples are analyzed	Assigned lab	Sensitivity	Must be low enough to support the QLs

QAPP Worksheet #28-6
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Dioxins/Furans
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	SW846-8290 (Test America SOP WS-ID-0005) or DLM02.0
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	Test America West Sacramento or other Assigned lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria[2]

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The assigned laboratory also must perform and meet all the measurement performance criteria that assess the analytical DQIs specified in SW846-8290 or if analyzed by a CLP lab by DLM02.0.

QAPP Worksheet #28-7
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Soil
Analytical Group	Radiological
Concentration Level	Low
Sampling SOP	Per the Sevenson QAPP
Analytical Method/ SOP Reference	HASL-300 or equivalent
Sampler's Name	Malcolm Pirnie
Field Sampling Organization	Split samples will be obtained from Sevenson
Analytical Organization	OutReach Analytical or alternate lab
No. of Sample Locations	Per Worksheet No. 20

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action [1]	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria [2]
Lab Duplicates	1 per 20 field samples	QAPP	If the limit exceed investigate and correct	Malcolm Pirnie and or Laboratory	Precision	RPD<35% for duplicate values or with a difference <2 times the detection limit
Calibration verification	Per sample batch	Per lab SOP	If the limit is exceeded, investigate and correct. The instrument will be recalibrated and the calibration verified.	Assigned lab	Accuracy	Gamma Spectroscopy: Detector Resolution – within ±0.4 Full Width at half maximum Energy – within ± 1 keV of the known energies Efficiency- 90-110% of the efficiency determined during initial calibration
Detector Background	1 per 20 field samples	Per lab SOP	Investigate and correct	Assigned lab	Accuracy	Gamma Spectroscopy: ±3 standard deviations of the long-term average

1. Any corrective actions necessary as a result the differences between the split sample data (the primary Sevenson data and the split sample data) will be handled on a case by case basis with the direction from the USEPA and USACE (See Worksheet 37).
2. The subcontract lab will be required to meet the above criteria.

QAPP Worksheet #29

(UFP-QAPP Manual Section 3.5.1)

This section identifies the documents and records that will be generated for all aspects of the project including, but not limited to, sample collection and field measurement, on-Site and off-Site analysis, and data assessment.

Project Documents and Records Table

Sample Collection Documents and Records	On-Site Analysis Documents and Records	Off-Site Analysis Documents and Records	Data Assessment Documents and Records	Other
Field Notes and/or data sheets	Sample collection and custody records.	Copies of field notes and COC records will be made and stored in the project files	Records	Prepared and submit to Project Team
Air bills	Air bills	Copies of Air Bills will be kept in project files	Project Records	
Comparison of Sevenson preliminary primary data with preliminary split sample data		Preliminary data received on the primary samples electronically from Sevenson through the USACE with preliminary split sample data	Spreadsheet comparing preliminary data received from Sevenson through the USACE with preliminary split sample data	
Analytical Data Packages	Hardcopies and data deliverables	Copies of all analytical data deliverables stored in lab and transferred to project files. Instrument calibration records, lab and raw data stored electronically and/or in hardcopy format.	QA Review sheet	
Data Validation Reports, if required for non-CLP or non-DESA data	Data Validation Reports	Stored in project files	QA Review sheet	

Project Documents and Records Table

Sample Collection Documents and Records	On-Site Analysis Documents and Records	Off-Site Analysis Documents and Records	Data Assessment Documents and Records	Other
Draft Final Summary Report	Summary of split sample/Sevenson data comparison	Stored in the project files		Prepare and submit to Project Team
ANSETS Forms	Record of collected samples, requested analyses, and cost			Prepare and submit to USEPA Region 2 with copies to USACE-KCD

Data Management

This section describes the project data management process, tracing the path of the data from their generation to their final use or storage. All project data and information must be documented in a format useable to the project personnel.

Project Document Control System

Project documents will be controlled by the Malcolm Pirnie PM and the Work Plan Task Leader, who will maintain and distribute the hardcopies and electronic copies of the project documents, including any amendments. Electronic copies of project information will be maintained in the project directory on the server in the Malcolm Pirnie Corporate Headquarters, which is backed up at least once per day.

Data Recording

Data for this project will be collected as handwritten entries and will be recorded onto field logbooks or forms. Manual COCs and labels will be created or alternately Forms II Lite software may be used to electronically generate COC records and sample labels. Forms II Lite software has been designed to meet USEPA requirements. The Malcolm Pirnie IT department can provide laptop computers properly configured to meet the minimum requirements outlined in the Forms II Lite Users manual. Computer-generated data associated with laboratory analyses will be managed under the control of the assigned laboratory's laboratory information management system (LIMS). Requirements for the LIMS software can be found in the individual laboratory's QA documentation.

Types of Project Documentation and Records

1. Analytical Records include items such as:
    a. COC records.
    b. Sample receipt records.

c. Records of sample preparation and analysis.

d. Instrument calibration records.

e. Raw data files.

f. Electronic Data Deliverables (See Attachment 12 for an Example of the Electronic Deliverable).

g. Analytical Results and supporting data.

h. Sample Data Packages.

2. Project Data Assessment Records such as:

   a. Data Validation Reports.

Laboratory Data Transmittal

Laboratory data are managed by the laboratory's LIMS system, beginning with sample check-in on the sample receiving data terminal. For non-CLP laboratories, full laboratory data reports will be delivered to Malcolm Pirnie and will also include electronic data deliverables (EDDs).

Data Storage and Retrieval

Paper copies of the forms and electronic copies of files will be transmitted regularly to the Malcolm Pirnie PM. The completed forms and notebooks will be stored in the custody of the PM for the duration of the project. The full laboratory data reports submitted to Malcolm Pirnie will be stored in the custody of the Project QC Officer. Hard copies of project files will be archived off-site at a secure facility and retained until the end of the contract; project closeout will be conducted in accordance with USEPA Close-out Guidelines. Data will be transferred to the USACE upon completion of the project. Retrieval of data by others will be at the discretion of the USACE and the USEPA. The length of time that records will be archived will be at the discretion of the USACE and USEPA.

Each laboratory shall archive, electronically, the sample analyses and submit the electronic data files along with the data deliverable package. In addition, each laboratory must submit instrument manufacturer, method files and ID file information. Malcolm Pirnie must receive this information in the event a lab on this project closes or updates hardware/software.

QAPP Worksheet #30
(UFP-QAPP Manual Section 3.5.2.3)

Analytical Services Table

Matrix	Analytical Group	Concentration Level	Sample Location/ID Numbers	Analytical SOP [1]	Data Package Turnaround Time[2,3]	Laboratory/Organization (Name and Address, Contact Person and Telephone Number)	Backup Laboratory/Organization (Name and Address, Contact Person and Telephone Number
Soil (Post Excavation)	Inorganic TAL Metals and Cyanide	Low	Split Samples (Post Excavation Confirmation)	USEPA ILM05.4	Request Preliminary data in 48 hours[3]. Data Packages in 30 days.	USEPA CLP Laboratory, DESA laboratory as assigned through FASTAC process. Adly Michael, USEPA Edison, NJ 732-906-6161	A backup lab has not been assigned at this time.
	VOCs	Low		USEPA SOM01.2			
	SVOCs	Low		USEPA SOM01.2			
	PCBs	Low to high		USEPA SOM01.2			
	Organochlorine Pesticides	Low		USEPA SOM01.2			
Soil (Post Excavation)	TCL Dioxins/Furans	Low	Split Samples (Post Excavation Confirmation)	SW846-8290 or USEPA DLM02.0	Request Preliminary data in 48 hours[3]. Data Packages in 30 days.	Test America, 880 Riverside Parkway West Sacramento, CA 95605 Contact: Dave Hebert, Customer Service Manager, 916-373-5600	A backup lab has not been assigned at this time.
Soil (Post-LTTD)	Inorganic TAL Metals and Cyanide	Low	Split Samples (Post-LTTD treatment)	USEPA ILM05.4	Request Preliminary data in 48 hours[3]. Data Packages in 30 days.	USEPA CLP Laboratory, DESA laboratory as assigned through FASTAC process. Adly Michael, USEPA Edison, NJ 732-906-6161	A backup lab has not been assigned at this time.
	VOCs	Low		USEPA SOM01.2			
	SVOCs	Low		USEPA SOM01.2			
	PCBs	Low to high		USEPA SOM01.2			
	Organochlorine Pesticides	Low		USEPA SOM01.2			

Analytical Services Table

Matrix	Analytical Group	Concentration Level	Sample Location/ID Numbers	Analytical SOP [1]	Data Package Turnaround Time[2,3]	Laboratory/Organization (Name and Address, Contact Person and Telephone Number)	Backup Laboratory/Organization (Name and Address, Contact Person and Telephone Number
Soil (Post-LTTD)	TCL Dioxins/Furans	Low	Split Samples (Post Excavation Confirmation)	SW846-8290 or USEPA DLM02.0	Request Preliminary data in 48 hours[3]. Data Packages in 30 days.	Test America, 880 Riverside Parkway West Sacramento, CA 95605 Contact: Dave Hebert, Customer Service Manager, 916-373-5600	A backup lab has not been assigned at this time.
Soil (Pre-Excavation at SB39)	TCL Dioxins/Furans	Low	Split Sample (pre-excavation at SB39)	SW846-8290 or USEPA DLM02.0	Request Preliminary data in 48 hours[3]. Data Packages in 30 days.	Test America, 880 Riverside Parkway West Sacramento, CA 95605 Contact: Dave Hebert, Customer Service Manager, 916-373-5600	A backup lab has not been assigned at this time.
Soil (Backfill)	Radiological	Low	Split Samples	HASL-300 or equivalent	Preliminary data will be requested in 10 days Data Package 30 days	Ron Eidson OutReach Analytical 311 North Aspen Broken Arrow, OK 74012	A backup lab has not been assigned at this time.

1. If the USEPA DESA lab is assigned to analyze the samples they will perform the QC required in the applicable DESA SOP.
2. These are the turn-around times which will be requested, but we anticipate the actual turn-tines may vary dependent upon the capabilities of the assigned lab.
3. The 72 hour turn-around time for preliminary data includes an estimated 24 hours for sample delivery and 48 hours for laboratory analysis.

QAPP Worksheet #31
(UFP-QAPP Manual Section 4.1.1)

Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings (Title and Organizational Affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (CA) (Title and Organizational Affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (Title and Organizational Affiliation)
QC Reports of any non-conformance	Daily as required	Internal	Malcolm Pirnie	Field Team Members	Malcolm Pirnie Project QC Officer	Malcolm Pirnie PM or designees	Malcolm Pirnie Project QC Offcier

QAPP Worksheet #32
(UFP-QAPP Manual Section 4.1.2)

Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (Name, Title, Org.)	Timeframe for Response
Non-Conformance	See below	Project QC Officer	As soon as possible	Complete non-conformance form	PM	As soon as possible
Internal Subcontract Laboratory Audits (Does not apply to DESA or assigned CLP labs)	Per Laboratory Quality Manual	Laboratory Management or designee	Annually	Per Laboratory Quality Manual	Laboratory Personnel	Per Laboratory Quality Manual

Non-Conformance/QC Reporting

A non-conformance is defined as an identified or suspected deficiency or discrepancy with regard to an approved document (*e.g.*, improper sampling procedures, improper instrument calibration, calculation, computer program); or an item where the quality of the end product itself or subsequent activities using the document or item would be affected by the deficiency; or an activity that is not conducted in accordance with the established plans or procedures. Any staff member engaged in project work that discovers or suspects a non-conformance is responsible for initiating a non-conformance report to the Project QC Officer. The Project QC Officer will evaluate each non-conformance report and the Project QC Officer will provide a disposition which describes the actions to be taken. The PM will verify that no further project work dependent on the nonconforming item or activity is performed until approval is obtained and the non-conformance is properly addressed. If the non-conformance is related to material, the PM shall be responsible for marking or identifying, with the non-conformance report number, the nonconforming item (if practical) and indicating that it is

nonconforming and is not to be used.

Internal Laboratory Audits (For Commercial Labs Only)

As part of its QA program, the Laboratory Quality Assurance Manager (QAM) will conduct periodic checks and audits of the analytical systems to ensure that the systems are working properly and personnel are adhering to established procedures and documenting the required information. These checks and audits will also assist in determining or detecting where problems are occurring. Each subcontract laboratory (non-DESA or non –CLP) selected to support this program must maintain current certifications, as appropriate.

Laboratory Corrective Actions

If a particular laboratory analysis is deemed "out of control," corrective action will be taken by the laboratory to maintain continued data quality. Each laboratory must adhere to their in-house corrective action policy. The coordinator of the laboratory's analytical section will be responsible for initiating laboratory corrective action when necessary.

QAPP Worksheet #33
(UFP-QAPP Manual Section 4.2)

QA Management Reports Table

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (Title and Organizational Affiliation)	Report Recipient(s) (Title and Organizational Affiliation)
Progress Reports	Monthly	End of each month	Malcolm Pirnie PM or DPM	USEPA and USACE-KCD PMs
Data Validation Report	After lab data is received	Within 21 days after receiving data for validation	Data Validator	Project QC Officer and PM
Corrective Action Reports	When corrective action is required	When corrective action is implemented	PM or designee	Project Team and PM(s)

The USACE-KCD PM and USEPA PM will receive several types of management reports. These will include the results of any corrective action reports and data validation reports. In addition, the progress report will contain a section on quality control reports. Problems or issues that arise between regular reporting periods may be identified to program management at any time. Information included in the progress report will include the following:

- An assessment of any problems with the measurement data, including accuracy, precision, completeness, representativeness, and comparability.
- A listing of the non-conformance reports including Stop Work Orders issued during the period, related corrective actions undertaken, and an assessment of the results of these actions.
- Identification of significant quality assurance problems and recommended solutions, as necessary.

QAPP Worksheet #34
(UFP-QAPP Manual Section 5.2.1)

This worksheet and text section describes the processes that will be followed to verify project data. Verification inputs include items such as those listed in Table 9 of the UFP-QAPP Manual Section 5.1 (use of the terms internal or *external* is in relation to the data generator).

Verification (Step I) Process Table

Verification Input	Description	Internal/ External	Responsible for Verification (Name, Organization)
COC Form	Form will be internally reviewed upon completion and verified against field logs and laboratory reports. Review will occur with the completetion of each report	I	Malcolm Pirnie
Laboratory data packages	Laboratory data packages will be used to verify the report results in the project report and against QAPP criteria	I	Malcolm Pirnie

Data Verification

- The SMO or designee will review the COC entries for errors or omissions. This information is transmitted to the Project QC Officer or designee for correction.

- In addition, the Project QC Officer or designee is responsible for reviewing field data for completeness and to verify that the field crew followed the QC requirements detailed in this QAPP (*e.g.*, the collection of QC samples at the required frequency, response checking the field instruments). If any problems with the information are found, the Project QC Officer or designee will document the problems.

QAPP Worksheet #35
(UFP-QAPP Manual Section 5.2.2)

This worksheet describes the processes that will be followed to validate project data. Validation inputs include items such as those listed in Table 9 of the UFP-QAPP Manual (Section 5.1). It describes how each item will be validated, when the activity will occur, and what documentation is necessary and identifies the person responsible. It also differentiates between steps IIa and IIb of validation.

Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation (Name, Organization)
IIa	Methods	Evaluate implementation of SOPs in QAPP via project records review.	J. McCann, Malcolm Pirnie, Inc.
IIa	Chain of Custody	Examine traceability of data from sample collection to generation of project report	J. McCann, Malcolm Pirnie, Inc.
IIb	Deviations from SOP and project documents.	Determine impacts of any deviation from method and the project plan.	Project Team led by Edward Dudek, PE, Malcolm Pirnie, Inc.

QAPP Worksheet #36
(UFP-QAPP Manual Section 5.2.2)

This worksheet and text section identifies the matrices, analytical groups, and concentration levels that each entity performing validation will be responsible for, as well as criteria that will be used to validate those data.

Validation (Steps IIa and IIb) Summary Table

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (title and organizational affiliation)[1]
IIa/IIb	Soil	TAL Metals/Mercury/ Cyanide	Low	USEPA Region 2 Validation Criteria	USEPA Data Validators
IIa/IIb	Soil	VOCs	Low	USEPA Region 2 Validation Criteria	USEPA Data Validators
IIa/IIb	Soil	SVOCs	Low	USEPA Region 2 Validation Criteria	USEPA Data Validators
IIa/IIb	Soil	PCB Aroclors	Low	USEPA Region 2 Validation Criteria	USEPA Data Validators
IIa/IIb	Soil	Pesticides	Low	USEPA Region 2 Validation Criteria	USEPA Data Validators
IIa/IIb	Soil	Dioxins/Furans	Low	Note 1	Note 2
IIa/IIb	Soil	Radiochemistry	Low	Note 1	Note 2

1. Data will undergo QA review by the laboratory's QA department. If in the judgment of the Project QC Officer there are significant differences (greater than a RPD of 50% for positive results above 5 times the reporting limit) between the split sample data and the Sevenson data, the data with undergo further evaluation and validation by qualified Malcolm Pirnie personnel or experienced validation subcontractors.
2. If the commercial subcontract laboratory data requires further review due to differences with the Sevenson data, it will be validated by a Malcolm Pirnie data validator or subcontractor in accordance with the QC requirements of this QAPP, USEPA's National Functional Guidelines, and/or applicable Region 2 guidelines.

QAPP Worksheet #37
(UFP-QAPP Manual Section 5.2.3)

This worksheet describes the procedures/methods/activities that will be used to determine whether data are of the right type, quality, and quantity to support environmental decision-making for the project.

Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used: Preliminary split data received from the laboratories will initially be compared to preliminary data obtained from Sevenson's laboratories on the primary samples. If the differences between the preliminary results are large enough to affect the site remediation decisions, than further actions may be taken to resolve the differences determined on a case by case basis following direction received from the USEPA Remedial Project Manager (or his designee) and the USACE-KCD. Per Worksheet No. 36, CLP data will be validated by the USEPA Region 2, The Malcolm Pirnie data validator will review, and if necessary, validate the non-CLP chemical data in accordance with the protocols outlined in Worksheets 35 and 36. Any validator qualifications will be considered when comparing the final split sample data to the final Sevenson data. Split sample data which are found to be unusable or not reliable by the validators will not be compared.
Describe the evaluative procedures used to assess overall measurement error associated with the project: As part of the data validation process, the validator identifies any qualifications, the bias, if known, of the data, and applies qualifiers and comments on the usability of the data. Once the validation package is received from the validator it is reviewed by the Project QC Officer or a designee. Any QA/QC problems with the validation will be discussed with the validator and laboratories.

Identify the personnel responsible for performing the usability assessment:

The usability of the data will initially be evaluated by the Project QC Officer and PM after comparison to the Sevenson data on the split samples. If the differences in this data are large enough that they affect the site remediation decisions, then further actions will be taken following direction received from the USEPA Remedial Project Manager (or his designee) and or the USACE-KCD Chemist.

The usability of the data is the responsibility of the project team. The PM and Project QC Officer will reconvene the project team after the all data has been validated and reviewed. The data users performing the oversight of the Sevenson soil remediation will participate in a usability assessment, help to determine if the data is sufficient to meet the data needs and the project objectives, and will recommend whether additional data is required. A data assessment report will be issued by the PM or his designee documenting the results of the usability assessment review performed by the project team. The report will be submitted to the USEPA and USACE for their approval and regulatory review.

REFERENCES:

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2. Malcolm Pirnie Inc, 2006. Cornell-Dubilier Soils Quality Assurance Project Plan. August 2006.

3. Malcolm Pirnie, Inc., 2006. Cornell-Dubilier Project Health and Safety Plan. August 2006.

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5. USACE, 2001. USACE Requirements for the Preparation of Sampling and Analysis Plans. 2001.

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9. USEPA, 2005. Contract Laboratory Program, Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration (SOM01.1), May 2005.

10. USEPA, 2005. Contract Laboratory Program, Statement of Work for Chlorinated Biphenyl Congeners Analytical Services for Superfund (CBC01.0), May 2005.

11. USEPA, 2005. Intergovernmental Data Quality Task Force, Uniform Federal Policy For Quality Assurance Project Plans, Part 1: UFP-QAPP Manual, EPA-505-B-04-900A, Final Version 1, March 2005

12. USEPA, 2005. Intergovernmental Data Quality Task Force, Uniform Federal Policy For Quality Assurance Project Plans, Part 2A: UFP-QAPP Workbook, EPA-505-B-04-900C, Final Version 1, March 2005.

13. USEPA, 2005. Intergovernmental Data Quality Task Force, Uniform Federal Policy For Quality Assurance Project Plans, Part 2B: Quality Assurance/Quality Control Compendium: Minimum QA/QC Activities, EPA-505-B-04-900B, Final Version 1, March 2005.

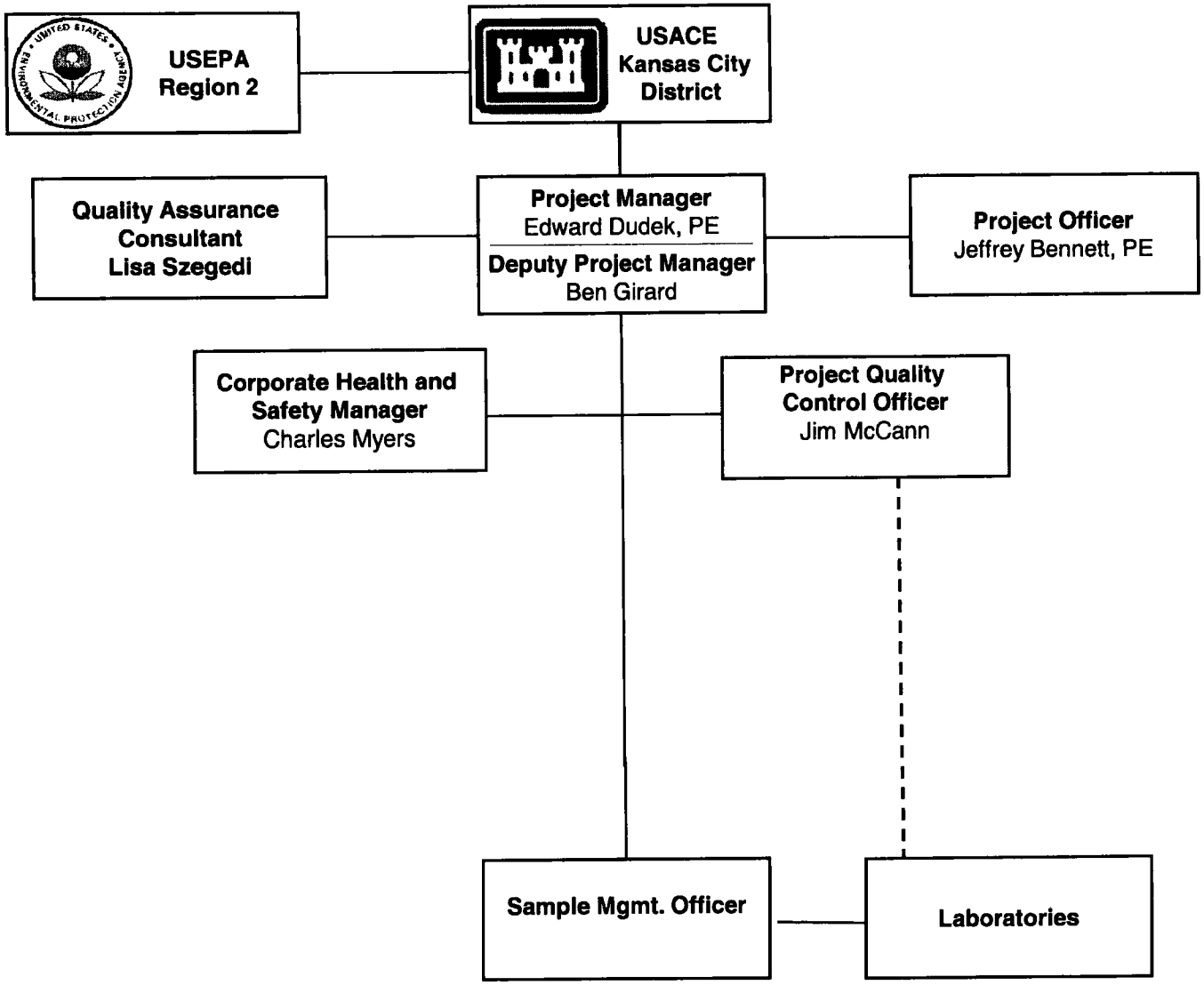
14. USEPA, 2005, SOP No. HW-32 Standard Operating Procedure for Implementing The National Strategy For Procuring Analytical Services For All OSWER Programs (Superfund, RCRA, and Brownfields, Revision 5, March 17, 2005)

15. USEPA, 2007. Contract Laboratory Program Guidance for Field Samplers, OSWER 9240.0-44, EPA 540-R-07-06, July 2007.

16. USEPA, 2007. Introduction to the Analytical Services Branch (ASB) Contract Laboratory Program, EPA 540-R-07-05, OWER 9240.0-42, January 2007.

17. USEPA, 2007. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, OSWER 9240.1-46, EPA-540-R-04-003, July 2007.

18. USEPA, 2007. Modifications Updating SOM01.1 To SOM01.2 October 5, 2005, (Updated 02-12-2007) Amended 04-11-2007).



MALCOLM PIRNIE	**Figure 1:** Cornell-Dubilier Electronics Superfund Site Project Team Organization Chart	August 2009

ATTACHMENT 1

SOP No. 1: Procedure to Conduct Sample Management for CLP and Non-CLP Samples

Attachment 1

SOP No. 1

Procedure to Conduct Sample Management for CLP and non-CLP Samples

I. Introduction

This guideline is to provide reference information on sample management procedures.

II. Definitions

Contract Laboratory Program (CLP) – The U.S. Environmental Protection Agency (USEPA) CLP was developed to retain laboratory services that will ensure that all environmental samples collected under the Superfund Program will be analyzed in accordance with recognized USEPA laboratory methods and quality assurance/quality control (QA/QC) procedures. See http://www.epa.gov/superfund/programs/clp/ for detailed information on the CLP.

Target Compound List (TCL) – This is a list of organic compounds typically analyzed for by the CLP. The list is broken into three subdivisions: volatiles, semi-volatiles, and pesticides/polychlorinated biphenyls (PCBs).

Target Analyte List (TAL) – This is a list of inorganic parameters typically analyzed for by the CLP. Parameters on this list include heavy metals and cyanide.

Routine Analytical Services (RAS) – Laboratory analysis for parameters included on the TCL and/or the TAL in solid and aqueous samples.

Non-RAS – Laboratory analysis for substances or parameters not included on the TCL or the TAL. Also encompasses analysis of non-soil/sediment, non-aqueous matrices, and analysis of RAS compounds using non-RAS protocols.

Trip Blanks – Trip blanks are used to check for sample contamination originating from sample transportation and shipping, as well as from site conditions. Trip blanks are necessary when aqueous environmental samples are collected for volatile organic analysis.

Rinsate Blanks – Rinsate blanks, also known as field blanks, are used to check the efficacy of sampling equipment decontamination procedures. Rinsate blanks are collected for each type of non-dedicated sampling equipment used on-site. Demonstrated analyte-free water is poured over the equipment, collected in containers, and analyzed for the analytes of concern.

Field Duplicate – Field duplicates are two separate samples collected from the same sampling location. Field duplicates are used to evaluate field sampling precision and are collected at a set frequency for each analyte group. For soils, a sample aliquot is homogenized and split into two sampling containers.

Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSD analysis is the process by which standard mixes of various organic TCL compounds are added to field samples prior to extraction. The sample is then split into duplicates and analyzed. The analysis is used to evaluate the matrix effect of the sample upon the analytical methodology. Triple volume of aqueous samples for MS/MSD analysis is collected in the field, at a frequency of at least 5 percent per matrix/concentration. No extra volume is required for the soil samples.

III. Guidelines

The use of sample management procedures during sample collection is intended to ensure that samples required during the site investigation are accounted for when the project is completed. The sample management officer (SMO) is responsible for the implementation of sample management, and also for assuring that the proper QA/QC samples are collected. These goals can be achieved by adhering to the procedures and guidelines described in Sections IV, V, and VI below.

IV. Laboratory Coordination

Analysis of CLP Samples

For samples that will be analyzed through the CLP, a request must be made through the Regional Sample Control Center Coordinator (RSCC), prior to the initiation of sample collection activities, for assignment of a laboratory per USEPA Region 2 SOP No. HW-32: Standard Operating Procedure for Implementing the National Strategy for Procuring Analytical Services for All OSWER Programs, Revision 5, March 17, 2005. At this time, any requested modifications to the CLP SOWs must also be described [*e.g.*, lower detection limits, adding a parameter to the TCL or TAL list, requesting a quicker turnaround time (TAT)].

A description of how to request CLP services is included in the USEPA-issued CLP Guidance for Field Samplers, OSWER 9240.0-44, EPA 540-R-07-06, July 2007. This guidance document can be found online at the following URL:
http://www.epa.gov/superfund/programs/clp/guidance.htm.

A request for CLP services generally includes the following steps:

1. Contact the RSCC well before the sampling event to discuss the CLP sample submission requirements. For USEPA Region 2, the RSCC is Jennifer Feranda, who can be contacted at 732-321-6687.

2. Fill out the RSCC request forms.

3. RSCC will contact the originator of the request with the Case Number and assigned laboratories. At times, the EPA Region 2 Division of Environmental Science and Assessment (DESA) Laboratory may choose to perform all or part of the analyses requested.

4. For a long-term project, weekly contact should be maintained with the RSCC.

For samples submitted to a CLP laboratory, Forms II Lite software must be used by the samplers to record the sample information and to create CLP sample numbers and the required COC forms. Assistance with Forms II Lite can be obtained by calling the help desk at 703-818-4200 or by visiting the Forms II Lite web site at http://dyncsdao1.fedcsc.com/itg/forms2lite/.

Analysis of non-CLP Samples

Subcontractor laboratory(ies) will be procured for the project to conduct analysis of non-CLP parameters, as required. Weekly contact should be maintained with these laboratories to keep them informed of the status of the sampling program.

V. Preparation of Sample Containers

When CLP and/or DESA laboratory(ies) are used, Malcolm Pirnie will purchase certified clean sample containers from an approved supplier. Copies of these certifications should be kept in the project files for future reference. When non-CLP laboratory(ies) are used, arrangements should be made with the subcontract laboratory to provide suitable, clean sample containers appropriate for each test.

It should be noted that non-CLP subcontract labs usually also provide coolers, but when samples are being sent to an assigned CLP lab or to the USEPA Region 2 DESA Laboratory, the samplers must make arrangements to obtain the coolers through the Malcolm Pirnie Equipment Facility prior to the sampling event. The Malcolm Pirnie Equipment Facility is located in the Tall Pines Industrial Park, 382 Route 59 Section 286, Monsey, NY 10952 (Contact Max Bateman at 845-357-0965).

VI. QA/QC Samples

Rinsate Blanks

Rinsate blanks (or Equipment Blanks) are collected for each type of equipment used to collect samples at the frequency specified in the Quality Assurance Project Plan (QAPP). It is recommended that rinsates be collected at a minimum frequency of one per week and at a maximum frequency of one rinsate per location per day. Decontaminated equipment must be properly stored in an area and in a manner that will prevent cross contamination. The analyte-free water required for equipment decontamination and rinsate blank collection will be purchased by Malcolm Pirnie from an approved supplier. Additional information on Rinsate Blanks is provided in SOP No. 5.

Where possible, composite rinsates will be collected from all equipment associated with a particular matrix for analysis of non-volatile parameters.

Rinsate blanks are collected using the following procedure:

1. Pour demonstrated analyte-free water over clean equipment.

2. Collect the water into sample containers.

3. Preserve, package, and ship to the analytical laboratory for analysis.

Field Duplicates

Samples for duplicate analysis are collected in the field for each matrix sampled, at the frequency described in QAPP. Sufficient quantity of matrix must be collected from the same sample location to fill a duplicate set of sample containers. The duplicate volume is shipped to the laboratory under a separate, "blind" sample ID (or CLP sample number).

For soil/sediment samples the volatile organic fraction is collected as co-located grab samples, while the non-volatile fraction is homogenized prior to collection. For dust and wipe samples field duplicate samples should be collected from an adjacent area of equal size.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Matrix Spike/Matrix Duplicate (MS/MD)

MS/MSD analyses for organics are typically conducted for 1 in 20 environmental samples per concentration/matrix. Three times the total volume is necessary for collection of aqueous MS/MSD samples. No extra volume is required for the soil samples. MS/MSDs are noted as such on the COC.

VII. Sample Documentation, Packaging, and Shipping Procedures

One or more members of the field team should be designated as Sample Management Officers (SMOs). The SMO will bear the ultimate responsibility for the documentation, packaging, and shipping of the samples. These procedures are outlined in the sections below.

Pre-Field Activities

If samples are being submitted to non-CLP labs, no special arrangements are required prior to the initiation of fieldwork. If samples are being submitted to CLP-assigned labs, the USEPA RSCC must be contacted for information regarding the following items prior to going out into the field:

- CLP Sample Numbers.
- SMO-assigned Case Numbers.
- Traffic Report/COC (TR/COC) Records.
- Custody seals.

Refer to the USEPA CLP Guidance for Field Samplers, Chapter 2 for detailed instructions regarding pre-field activities. This document can be found in QAPP Attachment 11.

Documentation and Chain of Custody

For documentation purposes, the field team will enter information about each sample into the field logbook as they collect the sample. The information recorded should include but not be

limited to the following:

- The Malcolm Pirnie-assigned sample number (sample ID).
- The CLP Number and Case Number (for CLP samples, only).
- Method of sample collection.
- Sample date.
- Time of collection.
- Preservative(s) used.
- Analyses required.
- Sample type.
- Associated rinsate(s).
- Sampler's initials.

The same information should be included on the sample bottle label(s).

Once all of the samples have been collected, they should be grouped for shipment by receiving laboratory and the COC filled out. How the COC is set up and filled out varies between CLP and non-CLP laboratories:

- When samples are being shipped to a non-CLP laboratory, COC forms provided by the laboratory can be used.

- When samples are being shipped to a CLP-assigned laboratory, the COC and sample labels should be created and printed using the Forms II Lite software. The labels can be printed in the field using a laptop PC and printer. It is also possible to pre-print the labels using the Forms II Lite prior to going to the field. Refer to the Forms II Lite User's Guide for instructions on the use of Forms II Lite software. Forms II Lite can also be used to create COCs for non-CLP samples. If circumstances require that handwritten sample labels must be used for CLP samples, follow the requirements in checklist Appendix E-4 of the USEPA's CLP Guidance for Field Samplers.

Before placing a sample in a cooler, the sample label should be covered with clear tape. The sample labels should contain the following information:

- Malcolm Pirnie-designated sample number.

- For CLP samples only, the assigned CLP Sample Number and CLP Case Number must be recorded on each sample taken during a sampling event.

- The month, day, and year the sample was collected.

- The type of analysis requested.

- The type of preservation performed in the field.

CLP Documentation Requirements

A full description of the CLP documentation requirements are found in Sections 1.4 and 3.2 of USEPA's CLP Guidance for Field Samplers. Samplers must:

- Record the CLP Number and Case Number on each sample bottle.
- Complete the TR/COC Record using the Forms II Lite software, making sure to indicate on the TR/COC Record if samples require the use of a Modified Analysis.
- Complete and attached sample labels.
- Complete and attach tags to meet Regional requirements.
- Complete and attach custody seals to meet Regional requirements.
- Complete field operations records, as necessary.

Contact the RSCC before the sampling event for information regarding the assigned CLP Sample Numbers, SMO-assigned Case Numbers, TR/COC Records and chain-of custody seals for sampling events. Under no circumstances should the site name appear on any documentation that is sent to the laboratory when shipping CLP samples.

Packaging and Shipping Samples

Below are guidelines for packaging and shipping samples. A checklist for packing CLP samples for shipment can also be found in Appendix E-6 of the USEPA's CLP Guidance for Field Samplers.

1. Make sure the caps on the sample bottles are tightly sealed and taped shut. Wipe down the outside of all of the sample bottles.
2. Preserve the samples according to requirements in the QAPP.
3. For CLP, apply one custody seal around the circumference of the container or over the cap and onto the sides of the container. The custody seal must applied to sample containers in such a manner as to reveal if the container was opened during transit.
4. Place containers in its individual zip-lock bag. Eliminate extra air space from the bag before sealing.
5. For CLP samples, place the associated sample tag into the zip-lock bag with the sample.
6. Prepare the shipping container (usually a cooler) so that no leakage can occur during shipping. Securely seal all valves using duct tape on both the inside and the outside of the cooler, and line with plastic or a larger garbage bag. Only coolers that conform

to the general design requirements in 49 CFR 173.410 should be used for shipment.

7. Put 1-2 inches of packing material in the bottom of the coolers, and then place the samples into the garbage bag in the cooler.

8. Surround the sample bottles with bags of ice (only the samples that need to be cooled – refer to the QAPP requirements for sample preservation). Prior to placement in the cooler, remove the ice from the original bag and re-pack into doubled zip lock bags. Use enough ice to ensure that the proper temperature (2-6 °C) is maintained during transport. Place a temperature blank (40-mL vial filled with DI water and labeled as "temperature blank") into the cooler.

9. Place packing material over and around the sample bottles. Sufficient packing material must be used so the bottles will not move or break during transport.

10. Once the samples are packed, close and securely tie or tape the plastic or garbage bag.

11. Fill in the "relinquished by" and "received by" sections of the COC prior to shipment. The SMO should fill in the name of the commercial shipper (courier) and add the airbill number, if applicable, as the courier generally will not sign the COC.

12. Make enough copies of the COC form(s) to allow for placement of one set in each cooler that is not the lead cooler. Seal the original COC form in a ziplock bag and tape to the inside of the lead cooler, and seal one copy of the COC form(s) in a ziplock bag and place in each of the other cooler(s).

13. For CLP samples, retain one copy of the COC form for the SMO and one copy for transmission to the RSCC (send within 1 day). For non-CLP samples, retain one copy of the COC form for the SMO.

14. Close the cooler and seal with strapping tape. If visibly dirty, wipe down the outside of the cooler. Apply two signed and dated custody seals to the cooler diagonally across from each other where the cooler lid meets the cooler. Apply the custody seals in such a manner as to reveal if the cooler was opened during transit.

15. Place an address label on the outside of each cooler and cover with clear tape. If more than one cooler is being sent to one destination, label each cooler appropriately, *e.g.*, 1 of X, 2 of X, etc. Attach the airbill to one of the coolers. Generally, the samples are sent via overnight carrier for next day delivery. This should be confirmed with the Field Team Leader.

16. Notify the laboratory of the shipment before 9:00 a.m. on the day after shipping. For CLP samples, fill out the Sample Shipping Call-In Form. Call or fax the shipping information to RSCC by 9:00 am the following morning. For non-CLP samples, follow the notification system agreed to in the subcontract.

17. Instructions for shipping and packaging CLP samples can be found in the CLP Guidance for Field Samplers. Appendix E of the guidance contains sampling checklist which should be followed.

Note: Some samples have very short holding times. In some limited instances, the samples may need to be either hand delivered to a laboratory or picked up by the laboratory's courier service.

VIII. References

USEPA 2007, Introduction to the Analytical Services Branch (ABS) Contract Laboratory Program, EPA 540-R-07-02, OSWER 9240.0-42, January 2007

USEPA 2007, Contract Laboratory Program Guidance for Field Samplers, OSWER 9240.0-44, EPA 540-R-07-06, July 2007

Forms II Lite, Version 5.1, User's Guide

ATTACHMENT 2
Example of Chain of Custody Form For Sample Transfer

ATTACHMENT 2

EXAMPLE CHAIN OF CUSTODY FOR TRANSFER OF SPLIT SAMPLES FROM SEVENSON

Chain of Custody Record	TAL Metals _____ VOCs _____ Pesticides _____ Cyanide _____ SVOCs _____ Dioxin/furans _____ Mercury _____ PCB Arocolors _____ Other _____	

Date of Tranfer: Transfer From: **Sevenson** Transfer To	**Chain of Custody Record**	Sampler Signature:
	Relinquished by (TSI): (Date/Time)	Received by: (Date/Time)
	1.	1.
	2.	2.
	3.	3.
	3.	
	4.	4.

CHAIN OF CUSTODY

Sevenson Sample No.	Malcolm Pirnie Split Sample Number	Matrix	Sampler	Conc/Type	Preservative	Location	Collection Date/Time	TAL Metals plus mercury, cyanide	VOCs	SVOCs	PCB Arocolors by 8082	Organochlorine Pesticides	Dioxins/Furans by 8290		Remark	(For use by MP personnel) Sample Condition Upon Receipt
e.g. S1234567	*e.g. S1234567-MPI*	Soil														
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																

	Sample to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature upon receipt: NA	Chain of Custody Seal Number:
Concentration: L = low, M = low/medium, H = High		Type/Designate: C = Composite, G = Grab		Custody Seal Intact? / Shipment Iced?

ATTACHMENT 3

Modification Form

Attachment 3

MODIFICATION FORM
FOR
CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE OU-2
MALCOLM PIRNIE, INC.

Date:

Document:

Activity:

Requested Modification:

Rationale:

Attachments:

Malcolm Pirnie Project Manager: _____

Malcolm Pirnie Deputy Project Manager: _____

Malcolm Pirnie Project Quality Control Officer: _____

ATTACHMENT 4.1

USEPA, SOP NO. HW-32 SOP for Implementing the National Strategy
For Procuring Analytical Services

SOP NO. HW-32

STANDARD OPERATING PROCEDURE

FOR

IMPLEMENTING THE NATIONAL STRATEGY FOR PROCURING ANALYTICAL SERVICES FOR ALL OSWER PROGRAMS

(SUPERFUND, RCRA AND BROWNFIELDS)

Revision 5, March 17, 2005

By: _____ Date: 3/21/05
Jennifer E. Feranda, CLP Project Officer
Hazardous Waste Support Section

Concurred By: _____ Date: 3/21/05
Linda Mauel, Chief
Hazardous Waste Support Section

Approved By: _____ Date: 3/21/05
Robert Runyon, Chief
Hazardous Waste Support Branch

Overview

Superfund's Field and Analytical Services Teaming Advisory Committee (FASTAC) analytical services strategy requires Agency personnel to utilize a tiered decision tree for procuring Superfund analytical services for all non-time critical data collection projects. Region 2 has and continues to utilize that sequential decision tree for procuring Superfund analytical services. The decision tree is as follows:

Tier 1: EPA Region 2 DESA laboratory (including ESAT support)
Tier 2: National Analytical Services Contract Laboratories (CLP RAS and Non-RAS)
Tier 3: Region Specific Analytical Services (SAS) Contract Laboratories
Tier 4: Contractor, IAGs and Field Contractor Subcontract laboratories

Region 2 has taken many steps to assure that the FASTAC process is being followed and that Regional and National laboratory resources are being utilized to the fullest extent by the Superfund program. Some of these steps include:

1. Centralization of all Superfund analytical services procurement activities through the Regional Sample Control Coordinator (RSCC).

2. Coordination between the RSCC and the Regional DESA laboratory.

3. Outreach/training on the FASTAC process and procuring analytical services to the Superfund Program Office on a regular basis.

4. Participation in annual (or more frequent as needed) meetings with Superfund field contractors and their EPA Project Officers to outline the FASTAC process and associated requirements.

5. Operation of a Regional non-RAS tracking database, in addition to the National Analytical Services Tracking System (ANSETS) database, to track what non-RAS analytical services are being provided by the Regional DESA laboratory and what is being subcontracted out. The Regional database and ANSETS are compared on a monthly basis to assure that the FASTAC sequential decision tree for procuring analytical services is being followed.

The following is the step by step process by which the RSCC receives and processes RAS and non-RAS analytical requests.

Definitions:

Routine Analytical Services (RAS): Standard Target Compound List (TCL) (VOA/Semi-VOA/Pesticide/PCB Aroclors) and Target Analyte List (TAL) (metals and cyanide)

Non-Routine Analytical Services (Non-RAS): All analytical services not considered as RAS as follows:

1. Non-RAS analytical services able to be performed using the CLP RAS contracts flex clause
2. Non-RAS National CLP methods (Dioxin, PCB Congener, Air, etc.)
3. All other Non-RAS

Analytical Service Requestor: The EPA site Project Manager (OSC, RPM, etc.) or their designated representative (i.e., field contractor, State, Army Corp of Engineers, etc.).

Process:

RSCC Contact Information

Jennifer Feranda: Primary RSCC and CLP Project Officer, e-mail: feranda.jennifer@epa.gov; phone# (732) 321-6687
Adly Michael: RSCC, Database Coordinator, e-mail: Michael.adly@epa.gov; phone# (732) 906-6161
Robert Toth: RSCC, e-mail: toth.robert@epa.gov; phone# (732) 906-6171

The procurement of analytical services often starts with EPA PMs and/or their representatives contacting the RSCC to determine appropriate steps for procuring their analytical services and what documentation is required to submit these requests. The following steps delineate the process beginning with the RSCC's receipt of the formal request for analytical services:

1. **All analytical requests should be submitted to the RSCC at the earliest possible date.** Requests for all Superfund analytical services, both RAS and Non-RAS, are submitted to the RSCC up to one week prior to the sampling event. It is strongly recommended that all requests for non-Routine services be submitted at least four (4) weeks prior to the actual sampling event.* All requests should be submitted to RSCC by noon Tuesday. Any requests submitted after noon on Tuesday may not be considered until the following week.

2. DESA supplies analytical service requestors with electronic versions of the following analytical request forms: "U.S. EPA Region 2 CLP Analytical Services Request Form" (Attachment 1) and "U.S. EPA Region 2 Laboratory Analysis Request Form" (Attachment 2). All requests and subsequent correspondence relating to the request for booking are required to be transmitted electronically via e-mail. All requests should be

E-mailed to the RSCC, Jennifer Feranda with a cc: to Adly Michael and Robert Toth per the contact information provided above. This assures timely consideration of the analytical services request and serves as a Record of Communication (ROC) and the basis for hard copy documentation, as well as traceability for all requests being made.

3. Upon RSCC receipt of a request, a case folder is generated for that project. Hard copies of requests, ROC(s), additional e-mail and documentation relating to that case are placed in the file as they are received.

4. Upon receipt, analytical services requests are reviewed for completeness, accurate content, and confirmation of an approved (or approval pending) QAPP for the project. **No analytical services will be scheduled without an approved QAPP.**

5. Once requests have been reviewed for accuracy, completeness and QAPP status, they are submitted via e-mail to the DESA Lab. The DESA Lab holds booking meetings on Tuesday afternoons or Wednesday mornings to determine what projects (or portions thereof) they can accommodate.

6. No later then noon of Wednesday following the submittal of the request, the DESA Lab responds to the RSCC as to what analytical services they will provide. **All communications are done via e-mail in order to provide timely communication and a basis for a documented record.**

7. When the RSCC receives the information from the DESA Lab as to what services they will provide, several things occur:

   a. For RAS requests that will not be conducted by the DESA laboratory, the information is entered into the **S**uperfund **P**roject **R**equest **S**ystem (SUPRS) to be processed through the CLP. SUPRS is a national web based database that provides regional information to the Sample Management Office (SMO) to enable them to procure the appropriate CLP laboratory for the services requested.

   b. For non-RAS samples the CLP Organic and Inorganic Program Managers (PM) (located in HQ-Analytical Services Branch [ASB]) are consulted to see if special analyses can be performed through the CLP RAS contract(s) using the contracts "Flexibility Clause". If they can be analyzed through the CLP, RAS contract flex clause modifications are written by the PMs and requests are entered into SUPRS.

   c. Requests for Non-RAS national contracts (Dioxin, PCB Congener and Air analysis) are provided to the DESA Non-RAS program Task Order Project Officer (TOPO) for processing. The TOPO will write a specific Task Order Request for each individual project and submit it to ASB and the HQ Office of

Acquisition Management (OAM) Contracting Officer (CO) for review and to be offered for bid to contract labs under the National Non-RAS Blanket Purchase Agreements (BPAs). Once the lab(s) come back with a bid price, a lab is selected by the OAM CO and a procurement is prepared by the Region to transfer funds in to the national Non-RAS contracts. Laboratory information and special instructions are forwarded, via-email, to the EPA PM and their sampling representative at the time the procurement is to be prepared. Analytical services can be initiated upon OAM's receipt of the procurement.

d. For non-RAS requests that can be accommodated by DESA and/or the CLP flex clause, the analytical service requestor will be notified of such and will be provided contact and delivery, as well as any special, instructions.

e. For non-RAS requests that can not be accommodated through the DESA Lab, the CLP flex clause or the national Non-RAS program, the analytical services requestor is notified via e-mail that alternative means for analytical services will have to be obtained i.e., subcontract.

8. For work to be performed by the CLP for RAS and flexibility clause Non-RAS, SMO provides the RSCC, via e-mail, a Case number and laboratory assignments.

9. Once laboratory and case information are received from SMO (for CLP RAS and flex clause non-RAS), RSCC transmits this information, via e-mail to analytical services requestor. This information is transmitted via e-mail.

10. Two databases are maintained by the RSCC:

a. **Database #1:** This database tracks all RAS, flexibility clause non-RAS, and national contract non-RAS which are analyzed through the DESA Laboratory and the CLP (this database tracks all information from the time the samples are booked through sampling, analysis, data validation, and archiving). RAS analyses performed by the DESA lab are entered into this database, but only to the point of sample scheduling by the DESA lab. All work done after the scheduling is tracked by the DESA lab. (Attachment 3)

b. **Database #2:** This database tracks all other non-RAS analyses whether handled by the DESA laboratory or subcontracted out. It tracks non-RAS Superfund analytical work not tracked in Database #1(flex clause non-RAS and Non-RAS done through national contracts). The information in this database includes specifics about the project, the required analysis, number of samples, how those samples are analyzed (DESA vs. sub-contract lab), etc. (Attachment 4)

By COB Friday of each week, all new projects and relevant information are entered into each database as appropriate. The databases are updated with new information as needed.

11. At the end of each month, ANSETS (non-RAS tracking) information is provided to the RSCC by the analytical service requestors (Attachment 5). The information is entered into the Regional Database # 2 and the national ANSETS database. Monthly ANSETS reports are sent to the RSCC, by SMO, for their review. Concurrently, these reports are compared to the Regional Database #2 to try and determine whether the Superfund program and their representatives are following the FASTAC process as outlined by EPA HQ and Region 2.

12. If, after lab assignments are made, there is a change in the sampling event (i.e., change in date; cancellation; change in the number of samples being collected, etc.) the RSCC must be notified immediately upon the knowledge of any changes to the project, via e-mail. If there is a change in the sampling date or the number of samples being collected, a new laboratory request form (for the DESA laboratory or the CLP, as appropriate) must be submitted to the RSCC. (Reference Attachment 6).

* In FY' 03/04 DESA staff initiated a concerted effort to have RPMs involve DESA staff in scoping meetings for their projects. Early involvement in project planning enables the DESA lab to better accommodate the needs for the individual projects.

Names and Organizations Involved in the Procurement Process

RSCC: Jennifer Feranda and Adly Michael
EPA Region 2, Division of Environmental Science and Assessment (DESA)
Hazardous Waste Support Branch (HWSB), Hazardous Waste Support Section (HWSS)
DESA-HWSB-HWSS

- Regional Sample "Broker" all analytical services; oversight National CLP and National Non-RAS

DESA Lab Analytical Coordinator: John Birri,
EPA Region 2, DESA Laboratory Branch (LAB), DESA-LAB

- Coordination/Contact for all samples analyzed by the DESA Laboratory

Contractors and EPA Project Officers (PO):

Contractor: CDM Federal RACS
EPA PO: Fernando Rosado
CDM : Jeniffer Oxford

Contractor: Tetra Tech Environmental RACS
EPA PO: Keith Moncino
Tetra Tech: Lynn Arabia

Contractor: Weston RST
EPA PO: Helen Eng
Weston: Smita Sumbaly

Contractor: Weston SAT
EPA PO: Helen Eng
SAT: Yunru Yang

IAG: U.S. Army Corp of Engineers
EPA PO: Shaheer Alvi
USACE: Andrea Pouliet

ATTACHMENT 1

U.S. EPA REGION II

CLP ROUTINE ANALYTICAL SERVICES REQUEST FORM

Assigned CLP Case #:

Canceled:

Site Name:

City/State:

Site Spill ID:

CERCLIS ID:

Operable Unit:

Purpose Code:

Sampling Contact:

Phone#:

Organization:

EPA Project Manager:

QAPP Approved by EPA: Y/N

Date of QAPP Approval:

E-Mail Lab Assignments: Y/N

E-Mail for Lab Info:

E-Mail for Data:

Proposed Sampling Date(s):

Proposed Ship Date(s):

Saturday Delivery: Y/N

Oversight/Split Sampling (PRP/Fed. Facility): Y/N

Labs Used by PRP,FF:

Contaminant(s) of Concern (If known):

Number of Samples	Conc. Level L/M	Matrix (soil, aqueous, etc.)	Analysis	Turn Around Time 7, 14, or 21 days	SOW# and/or Method (i.e. OLM0x.x ,Modified 5035)	LabAssignment

Comments:

Sampling Project Manager: _____ **Signature/Date:** _____

RSCC: _____ **Signature/Date:** _____

ATTACHMENT 2

US EPA REGION 2 LABORATORY
non-RAS ANALYSIS REQUEST FORM

SURVEY NAME: _____ DATE OF INITIAL REQUEST _____ REVISED REQUEST DATE _____

REQUESTOR: _____ PHONE NUMBER _____ E-MAIL: _____

AFFILIATION: _____ Purpose Code: _____ Site Spill ID: _____ Operable Unit: _____

Address for Final Report:

Check to E-mail Final Report: ☐

# SAMPLES	ANALYTE	MATRIX
	SANITARY	
	ACIDITY	
	ALKALINITY, TOTAL	
	AMMONIA	
	ASPHALTENES	
	*BOD, 5 DAY	
	*CBOD, 5 DAY	
	CHLORIDE	
	COD	
	*COLOR	
	CORROSIVITY	
	CYANIDE	
	CYANIDE AMENABLE TO CHLORINATION	
	CYANIDE, WEAK ACID DISSOC (FRIDE)	
	DENSITY	
	*DO (Diss. Oxygen)	
	FLUORIDE	
	*HEX. CHROMIUM	
	IGNITABILITY	
	*MBAS (surfactants)	
	*NITRATE	
	NITRATE + NITRITE	

# SAMPLES	ANALYTE	MATRIX
	*NITRITE	
	OIL & GREASE	
	*ORTHOPHOSPHATE	
	PHENOLICS	
	PHOSPHORUS	
	SOLIDS, % 105degC	
	SPECIFIC CONDUCT.	
	SULFATE	
	SULFIDE	
	SULFIDE, UNIONIZED	
	SULFUR	
	TDS	
	TKN	
	TOC	
	TPH	
	TSS	
	*TURBIDITY	
	VISCOSITY	
	MICRO	
	ASBESTOS	
	*CLOSTRIDIUM PERFRINGENS	
	*CRYPTO/ GIARDIA	

# SAMPLES	ANALYTE	MATRIX
	*E. COLI	
	*ENTERO-COCCUS, MF	
	*ENTERO-COCCUS, MPN	
	*F-COLIFORM, MF	
	*F-COLIFORM, MPN	
	HETERO. PLATE COUNT (HPC)	
	*T-COLIFORM, COLILERT	
	*T-COLIFORM, MF	
	*T-COLIFORM, MPN	
	METALS	
	METAL:	
	ARSENIC	
	LEAD	
	METALS - SLUDGE	
	HARDNESS	
	METALS FINISHING	
	METALS TAL (DW levels)	
	METALS, TAL	
	METALS - TCLP	
	ORGANICS	
	NVOA, TCL	
	NVOA - TCLP	
	PAHs	
	TRIHALO- METHANES (THMs)	
	VOA, TCL	
	VOA, TCLP	

# SAMPLES	ANALYTE	MATRIX
	VOA, 524.2 (DW levels)	
	HALOACETIC ACIDS	
	ORGANOTINS	
	PCB CONGENERS (identify list)	
	PCBs, TCL	
	PCBs, TSCA	
	PESTICIDES, TCL	
	*PESTICIDES, WEST NILE	
	PESTICIDES, other (identify)	
	BIOLOGY	
	#EFFLUENT TOXICITY - ACUTE	
	#EFFLUENT TOXICITY - CHRONIC	
	#SED. TOXICITY - FRESH WATER	
	#SED. TOXICITY - MARINE WATER	
	GRAIN SIZE:	

1. Check Grain Size Method:
   - ☐ Pipet Method (Plumb 1981) OR
   - ☐ Hydrometer Method (ASTM 422D-63)
2. Check Sand/Sieve Reporting Units:
   - ☐ % Total Sand OR
   - ☐ % Sand Fractions (Very Coarse Sand, Coarse Sand, Medium Sand, Fine Sand, Very Fine Sand)
3. Check Fine or Mud Fraction Reporting Units:
   - ☐ % Total Fines (Silt + Clay combined) OR
   - ☐ % Total Silt and % Total Clay

☐ REQUEST ACCEPTED
☐ REQUEST NOT ACCEPTED

ABOVE STATUS APPROVED BY: JOHN BIRRI

DATE APPROVED: _____

NOTE: NO WEEKEND DELIVERIES ACCEPTED

SAMPLING DATES: from _____ to _____

SAMPLING TIMES FOR SHORT HOLDING TIME [asterisked]TESTS (check one):

☐ 0000 - 0600 ☐ 0600 - 1200 ☐ 1200 - 1800 ☐ 1800 - 2400 HRS

ARRIVAL DATES: from _____ to _____

ARRIVAL TIMES (check one): ☐ 8-11am ☐ 11am-4pm ☐ After 4pm

METHOD OF SHIPMENT: _____

SPECIAL REQUESTS: (e.g. - turnaround time, additional analytes, etc.)

REPORTING REQUIREMENTS (attach separate sheet, if more room is needed):

MATRIX KEY: A = AQUEOUS; D = DISSOLVED; S = SOLID; SL = SLUDGE; N = NON-AQUEOUS LIQUID/ OIL; O = OTHER (Describe)
- Specify organism, endpoints and test duration

VERSION DATE: 1/03/2005

ATTACHMENT 3

Database I / DATA TRACKING SUMMARY REPORT*

Site Name / Location		Case No./ Sampler	Request Rec'd Date	DESA Accept	CLP Accept	Requestor Notified Date	Case Booked Date	LAB	Analysis	Proj'd No. of Sample	TAT	Sampling Start Date	Sampling End Date	Data Due to HWSS	Act'l No. of Sample	Data Rec'd from Lab
Mohonk Road Industrial		**33937**														
High Falls	**NY**	**USACE**														
			2/22/2005	No, Odd Analyte(s)	Yes	3/4/2005	3/4/2005	LIBRTY	LC-VOA+1,4-di	5	14	3/10/2005	3/10/2005	3/25/2005		
Juana Diaz Wells		**33938**														
Juana Diaz	**PR**	**PREQB**														
			2/24/2005	No, Capacity	Yes	3/4/2005	3/10/2005	DATAC	LC-VOA	25	21	3/7/2005	3/11/2005	4/4/2005	17	
			2/24/2005	YES		3/2/2005	3/10/2005	DESA	LC-BNA	18	21	3/7/2005	3/11/2005		0	
			2/24/2005	YES		3/2/2005	3/10/2005	DESA	LC-Pest/PCBs	18	21	3/7/2005	3/11/2005		0	
			2/24/2005	YES		3/2/2005	3/10/2005	DESA	TAL-Metals+Hg	18	21	3/7/2005	3/11/2005		0	
			2/24/2005	YES		3/2/2005	3/10/2005	DESA	CN	18	21	3/7/2005	3/11/2005		0	
Lightman Drum Compan		**33939**														
Winslow Twp.	**NJ**	**CDM**														
			/1/2005	No, Capacity	Yes	3/4/2005	3/ /2005	A4	TC VOA	5	21	3/ /2005	3/18/2005	4/4/2005		
			/1/2005	YES		/1/2005	3/1/2005	ESA	TAL-Metals+Hg	3	21	3/ /2005	3/18/2005		0	
Fried Industries		**33940**														
East Brunswick	**NJ**	**TTFW**														
			2/25/2005	YES		3/1/2005	3/1/2005	DESA	TAL-Metals+Hg	7	21	3/7/2005	3/11/2005		0	
			2/25/2005	No, Odd Analyte(s)	Yes	3/4/2005	3/4/2005	LIBRTY	LC-VOA+1,4-di	10	21	3/7/2005	3/11/2005	4/4/2005		

ATTACHMENT 4

Database II / DATA TRACKING SUMMARY REPORT*

Site Name	Request Received Date	DESA Accept	Requestor Notified Date	Laboratory Name	Sampling Begin	Sampling End	Projected Samples	Collected Samples	Matrix	Analysis	TAT	Method
Consolidated Iron and Metals												
	6/1/2004	No, Capacity	6/3/2004	GPL Laboratories	6/7/2004	6/30/2004	5	3	Water	Volatiles	1	
	6/1/2004	No, Capacity	6/3/2004	GPL Laboratories	6/7/2004	6/30/2004	10	9	Water	TPH	21	SW-846 8015B
	6/1/2004	No, Capacity	6/3/2004	GPL Laboratories	6/7/2004	6/30/2004	3	2	Soil	TPH	21	SW-846 8015B
							18	14				
Lawrence Aviation Industries												
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	12	11	Water	Titanium	21	SW-846 6010B
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	140	136	Soil	pH	21	SW-846 9045C
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	140	136	Soil	TOC	21	Lloyd Kahn
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	140	136	Soil	Grain size	21	ASTM-D421-85
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	130	122	Soil	Titanium	21	SW-846 6010B
							562	541				
							580	555				

ATTACHMENT 5

Analytical Services Tracking System (ANSETS) Reporting in Region 2

The following details EPA Region 2's procedures/process for reporting under ANSETS.

1. All sampling organizations (EPA, state, US Army Corp, and contractors) in Region 2 that procure analytical services under Tier 4 of the FASTAC process (sub-contract, IAG, etc.) must submit a form (Exhibit 1)detailing these analytical services (i.e., site information, matrix, analysis, number of samples, laboratory, etc) to the Regional Sample Control Coordinator (RSCC) on a monthly basis.

2. All of the data provided by the sampling organizations are entered into the Regional Database #2 and a Regional copy of the ANSETS database.

3. The information from the Regional ANSETS database is then exported (on a monthly basis) to the Sample Management Office (SMO) for incorporation into the National ANSETs Database.

4. Once SMO collects all of the information, they prepare a report of all the information collected from the Region and send the RSCC a report detailing information on each site in which information that was submitted for that month as well as a running total of the different types of analyses reported for the Fiscal Year. This report is sent to the CLP Project Officer (PO)/RSCC monthly.

5. The CLP PO/RSCC reviews the report, compares it with the regional database (Database #2) and disseminates the information as necessary to the DESA Lab, HWSS and HWSB management. The CLP PO/RSCC also may contact EPA Project managers or their designated representatives when questions arise as to why sub-contracts were used vs. the EPA DESA lab or the CLP.

Contacts for ANSETS Reporting

Jennifer Feranda: EPA Region 2 CLP PO/RSCC; DESA-HWSB-HWSS
- Overall coordination; review of reports and dissemination of information

Adly Michael: EPA Region 2 RSCC
- Regional ANSETs Database management and data entry
- Maintains files on all ANSETS documentation submitted to RSCC

Sampling Organization Contacts (Responsible for submitting ANSETS information)

Dianne Salkie: US EPA Region 2 DESA-HWSB-SCST
Jenniffer Oxford: CDM Federal Programs
Lynn Arabia: Tetra Tech Environmental Corp.
Smita Sumbaly: Weston Removal Support Team (RST)
Yunru Yang: Weston Site Assessment Team (SAT)

Frank Sorce: NJ Department of Environmental Protection (NJDEP)
Lisa Greco-Segazi: Malcolm Pirnie Inc. (MPI)
David Evans: U.S. Army Corp of Engineers, Kansas City District

United States Environmental Protection Agency

EXHIBIT 1

Attachment 2 - ANSETS Data Requirement
(List of Required Data)

Date:

Sampling Start Date:
Sampling End Date:

Project Numbers			
Project Number:	Regional Account Number:	DAS Number:	Assoc. CLP Case No:
Site Information			
Site Name:		City:	State:
CERCLIS ID:	Operable Unit:	Action:	Funding Lead:
Responsible EPA Project Individual:		Sampling Organization:	

Analytical Services Information	
If field analytical services are used during this project write "field analysis" in the Laboratory Name Column. If fixed laboratory is used write the name of the laboratory in the Laboratory Name Column. Please specify in this box all field analytical techniques used.	COST:

Laboratory Name (include location if multiple lab locations)	No. Samples	Matrix	Analysis	Requested Turnaround (Days)

Completed by:	Organization:	Date:

ATTACHMENT 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: October 13, 2004

SUBJECT: Procedures for Notification of Changes in Sampling/Analytical Schedules

FROM: Robert Runyon, Chief
Hazardous Waste Support Section (2DESA-HWSB)

TO: Vince Pitruzzello, Chief
Program Support Branch (2ERRD-PSB)

The purpose of this memo is to provide you with an update on requirements for procuring any Superfund analytical services through EPA Region 2's Division of Environmental Science and Assessment (DESA) laboratory and the National Contract Laboratory Program (CLP).

Over the past several months there has been a significant increase in the number of sampling events that have; 1) been postponed; 2) been cancelled; 3) been extended beyond the sampling period previously designated; or 4) changed the number of samples submitted to laboratories for analysis from the number scheduled (increased or decreased, often significantly). While it is understood that sampling and field work can sometimes be unpredictable with delays and/or changes in sample numbers, sampling events requiring changes are occurring more frequently among Region 2 field contractors. In addition, RPMs and/or samplers are not notifying the Regional Sample Control Coordinator (RSCC) and/or DESA lab of any such changes in a timely manner. Often, the RSCC or DESA laboratory are notified after the samples were expected to arrive at the lab(s), and/or DESA staff are required to initiate contact with sampling contractors to determine the status of scheduled samples that have not been received.

Delays in notification of changes in scheduled sampling projects result in costly workload inefficiencies. DESA sample coordinating staff spend unnecessary time tracking down the status of specific projects when samples don't arrive on schedule, and the scheduled analytical resources requested are unavailable for use on other projects while committed to scheduled projects.

The following procedures are being implemented to make most cost effective use of analytical resources, and to ensure that proper communication on sampling issues is being maintained between EPA Project Managers, their contractors, and DESA staff:

1) It is the Site Project Manager's (RPM, OSC, SAM, etc.) and their contractor's responsibility to notify the RSCC of any changes to sampling schedules or numbers of samples being submitted. Notifications should be made immediately upon the knowledge of any changes to the sampling project schedule or sampling numbers. Failure to appropriately notify the RSCC could result in samples not being analyzed or an extension in the time to complete analysis. This holds true for both the DESA laboratory and the CLP.

2) All notification of changes in sampling schedules or the number of samples being submitted for analysis (either to the DESA laboratory or the CLP) **must** go through the RSCC, currently Jennifer Feranda.

3) For any changes in sampling dates or the number of samples being submitted, a new Booking request form must be completed and submitted to the RSCC. The appropriate form must be

used dependent on which lab(s) are scheduled to receive the samples (i.e., the DESA laboratory or the CLP).

4) Once all scheduling issues have been resolved, communication on other sampling and technical issues can be directed to the appropriate contacts: John Birri (732) 906-6886 for the DESA laboratory and Adly Michael (732) 906-6161 for the CLP.

Should you have any questions or require further information, please contact me at (732) 321-6645 or Jennifer Feranda of my staff at (732) 321-6687.

Attachments

cc: Deb Szaro
Linda Mauel
Jennifer Feranda
John Bourbon
John Birri
Adly Michael

ATTACHMENT 4.2

USEPA Region 2 Analysis Request Form

US EPA Region 2
Analysis Request Form

CLP Case/Project #:		Date Received by RSCC:		Date Cancelled:	

Site Name:		CERCLIS ID:		Sampling Dates:	
City/Town:		Op Unit:	Site Spill ID:	Start:	
State:		Action Code:		Finish:	

Arrival Time:
- ☐ 0800-1200Hrs
- ☐ 1200-1600Hrs
- ☐ After 1600 Hrs

EPA Project Manager:		Analytical Services Requestor:		Proposed Shipping Dates:	
First Name:		First Name:		Start:	
Last Name:		Last Name:		Finish:	
		Phone #:		Saturday Delivery?	☐ Yes
		Organization:			

EPA Approved QAPP?:	☐ Yes	Oversight/Split Sampling?:	☐ Yes
Date of QAPP Approval:		(e.g. PRP/Fed Facility)	

Labs Used:	
(PRP/FF)	

E-mail for Lab Assignments:	E-mail for Data:	Address for Hard Copy:

Contaminants of Concern (if known):	
Known Hazardous Waste Constituents:	
Special Requests & Reporting Requirements (attach if more space required):	

** Shaded area for RSCC use only **

U.S. EPA Region 2
Analysis Request Form

Site Name:						
# of Samples	Conc. Level (see key)	Matrix (see key)	Analyses	Turnaround Time (for validated data)**	SOW # / Method	Lab Assignment

** See instruction sheet for explanation of Turnaround Time for validated data.

Accepted by:		Date Accepted:	

** Shaded area for RSCC use only **

ATTACHMENT 5

USEPA Region 2 ANSETS Memo

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE:

SUBJECT: Tracking Superfund Non-CLP Analytical Data (ANSETS): Directive # 9240.0-2C

FROM: Jennifer E. Feranda, CLP Project Officer and Regional Sample Control Coordinator
Hazardous Waste Support Section (2DESA-HWSB)

TO: See Addressees

The purpose of this memo is to inform you about OSWER Directive # 9240.0-2C (attached) concerning the requirements for nationally tracking non-Contract Laboratory Program (CLP) analytical services. This directive supersedes OSWER Directives 9240.0-2A and 2B which established the Analytical Services Tracing System (ANSETS). The primary focus of the new directive is on tracking analytical data generated via EPA field contractors and their subcontractors at federal fund lead sites and at sites where EPA is the lead agency overseeing federal facility cleanups under Interagency Agreements. Per the Directive, RS&T Division laboratories, State-funded sites, and Potentially Responsible Parties (PRPs) do not need to comply with ANSETS data submission. However, under the Region 2 non-CLP tracking system that was established in 2000, the Region requires PRPs to report this information. Site Project Managers should be writing this requirement into their action memos, orders, etc. Although this information is not currently required by HQ, the Region will continue to require PRPs to submit this data to the Regional Sample Control Coordinator (RSCC).

The EPA Field and Analytical Services Teaming Advisory Committee (FASTAC) established a decision tree for selecting analytical services. The Tiers (with Tier 1 being the most favorable option) are:

Tier 1: RS&T Division Laboratories (preferred option for special analytical services)
Tier 2: CLP (preferred option for routine analytical services)
Tier 3: Region specific analytical services contracts
Tier 4: Obtaining analytical services using subcontractors via field contracts.

Tier 4 is the least preferred option due to lack of direct oversight of these contractors, quality assurance potentially not meeting EPA standards, and often higher costs for services. By requiring contractors to use the ANSETS tracking system, the Superfund program can determine whether the FASTAC strategy is being implemented, analyze trends in new services needed, track national laboratory analyses acquired for the Superfund program, and plan for quality assurance oversight.

The directive outlines several options for submitting ANSETS data, however, it also allows each Region to use their discretion on how the ANSETS information will be provided to HQ. Region 2 already has a system in place for reporting Non-CLP analytical services information, and will continue to utilize this system. To provide consistency between the Region 2 and National requirements, the region will now utilize the "ANSETS Data Requirement" form (copy attached) in place of the "Non-CLP Tracking Form" which is currently being used. The forms should be completed and submitted to the RSCC, currently myself, by the first of each month for the previous months sampling. Once the information is compiled in the Region, it will be sent to HQ for inclusion in the national database.

The requirements for ANSETS reporting became effective as of January 1, 2003. Per the

directive, Regional Contracting Officers and Project Officers will need to amend their assessment and response contracts to reinforce the ANSETS analytical services tracking requirements. If you have any questions regarding the implementation of these requirements, both national and regional, please contact me at (732) 321-6687.

Attachments

Addressees:

Shaheer Alvi
Helen Eng
Keith Moncino
Richard Graciano
Fernando Rosado
Kathy Moyik
Lisa Guarnieri
Superfund Remedial Project Managers
Superfund Site Assesment Managers
Superfund On-Scene Coordinators
HWSB

cc:
Vince Pitruzzello
Deb Szaro
Kevin Kubik